FREIGHTERS OF FORTUNE

NORMAN BEASLEY

NUNC COGNOSCO EX PARTE

TRENT UNIVERSITY
LIBRARY

Ottenberg Books
Seattle

Inscribed + autographed by the author

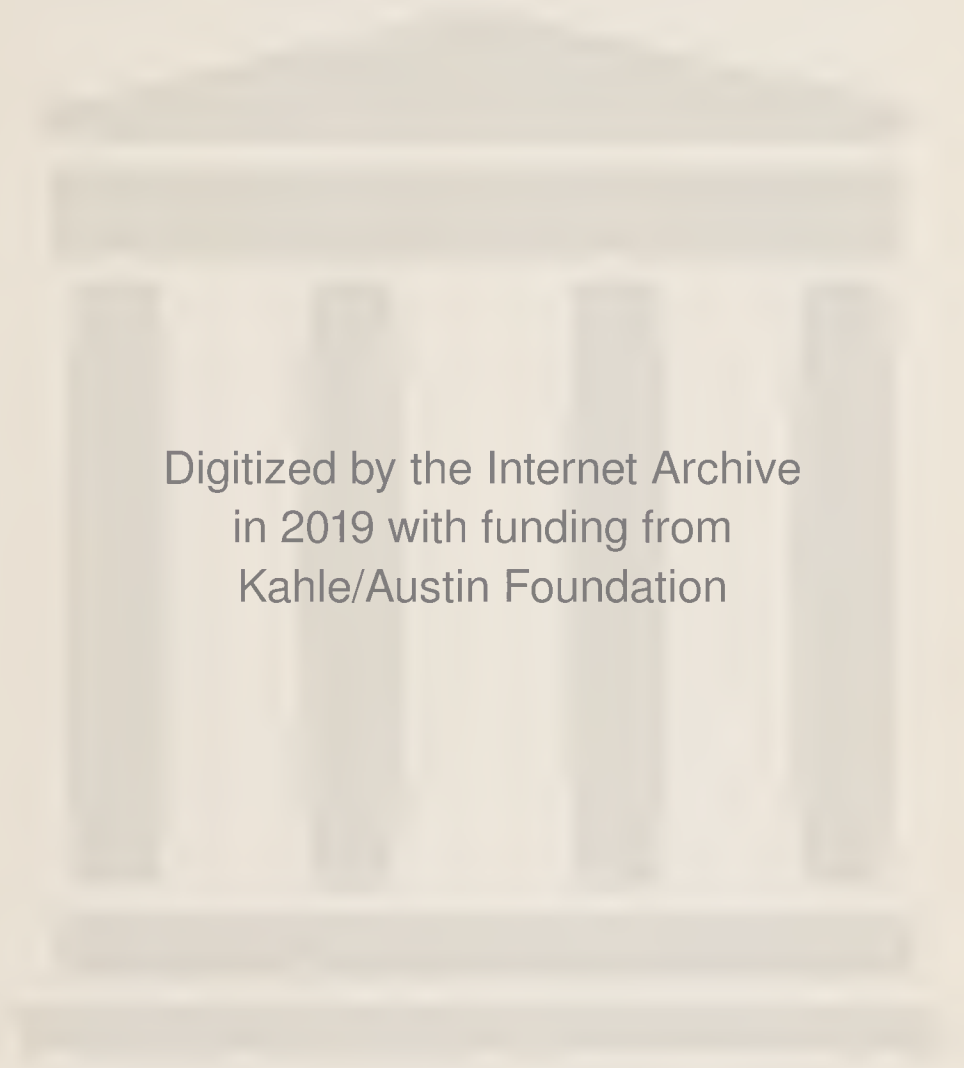
L - 2153

To Prof. Temperley and in lepidation because he knows so much about bees and things. Armand Bailey

Cleveland, O.,
July 1, 1930.

FREIGHTERS OF FORTUNE

The Story of the Great Lakes



Digitized by the Internet Archive
in 2019 with funding from
Kahle/Austin Foundation

https://archive.org/details/freightersoffort0000beas

A Pageant of Commerce in the St. Mary's River

Photograph by Margaret Bourke White
Permission of Fortune *magazine*

FREIGHTERS OF FORTUNE

The Story of the Great Lakes

BY

NORMAN BEASLEY

Co-author, "Men, Money and Motors"

HARPER & BROTHERS PUBLISHERS
NEW YORK AND LONDON
MCMXXX

HF 3157 .B4 1930

FREIGHTERS OF FORTUNE
COPYRIGHT, 1930, BY HARPER & BROTHERS
PRINTED IN THE U. S. A.
FIRST EDITION
E-E

CONTENTS

	Introduction	vii
	Prologue	1
I	A Cockleshell Sets Forth to Conquer the Lakes	4
II	A Treaty Brings Peace—and Commerce	17
III	A Great Fortune Begins in Furs	31
IV	Steam Comes to Replace the Slapping Sails	44
V	Copper and Iron—and the Rush Is On	61
VI	When Trade Calls Men Come	72
VII	A Salesman of Scales Builds a Canal	85
VIII	Work Is Suspended for Two Days While the Mail Is Read	97
IX	Other Fortunes Begin to Grow	110
X	A Great Heritage Is Passed	121
XI	Deep Faith and High Courage	130
XII	A Legislature Sets Back the Clock	139
XIII	"I've Got Wheat Aboard, I Have"	149
XIV	"There Is Iron on the Mesabi"	161
XV	"I Wouldn't Give a Cent for All the Iron in Minnesota"	170
XVI	The Rockefeller Fleet Comes to the Lakes	181
XVII	Andrew Carnegie Loses a Decision	193
XVIII	"I Come from the Wheat Bin of the Nation"	205
XIX	Sails Are Down—the Romance of the Schooner Is Over	216

198112

XX	A Man Is Picked	227
XXI	Bulk Freighters, Car Ferries, Sand Suckers, and Stone	240
XXII	Red Lanterns, One Above the Other, and Between—a White Lantern	253
XXIII	A Story of Patriotism, Generosity and Accomplishment	264
XXIV	"The Only Durable Things Are the Intangible Ones"	276
XXV	"They Have Come to These Lakes and They Have Not Looked Away"	287
	Bibliography	299
	Index	301

ILLUSTRATIONS

A Pageant of Commerce on the St. Mary's River *Frontispiece*

Facing p.

La Salle's *Griffin*, the "Cockleshell That Set Forth to Conquer the Lakes" 6

"Hermaphrodite" Brig, *Ramsey Crooks*, Built at Detroit, in 1836, for the American Fur Company 22

On the Detroit River in the 'Eighties—Ore Schooners Being Towed Down to Open Water 54

Before the Bulk Carrier Came to the Lakes. The *Cora A.* of Michigan City on Her Way Down with Iron Ore from Marquette 70

Sail and Steam—the *Australasia*, Built by James Davidson, and the Largest Ship on the Lakes in the Middle 'Eighties 86

The *James Davidson* of the Tomlinson Fleet Being Locked Through the Canal at Sault Ste. Marie 102

American Locks at Sault Ste. Marie 150

Iron Ore Docks at Superior, Wisconsin 166

Berwind Coal Docks at Superior, Wisconsin 182

Grain Elevators at Duluth 198

Iron Ore Unloaders in the Hold of the *Michael Gallagher* at Cleveland 230

The Bridge-tender 246

INTRODUCTION

From the day in 1679 when Cavelier de La Salle sailed away in his *Griffin* men have heard the call of trade from these now familiar waters.

Romance. Tragedy. Drama.

The Lakes have furnished all. The canoes of the Senecas have glided over them; ships have plunged into deep depths; soldiers of France, Spain, England, and the United States have fought for their possession.

And, now, for more than a hundred years, two nations, living side by side, have shared them and have built a pageant of traffic the like of which is seen nowhere else in the world. Across them, every year, moves a tonnage that is greater—many times greater—than that which passes through the Suez canal, where meet the trails of the world.

Gulls still ride at web-footed anchor on slowly heaving swells as they did in the days of La Salle but the smoke of the bulk carrier has replaced the etching of a white sail against a setting sun. Yet, each is romance.

The romance of today is the romance of men who have built an unparalleled commerce.

It is the story I have tried to tell.

—NORMAN BEASLEY.

PROLOGUE

ALONE sentinel, shoulders glistening against the setting sun, softly dipped his paddle, turning it so scarcely a ripple followed the wake of his canoe and signaled to those watching from the thickets lining the shore . . . white men were coming around the headland off to the North.

A moment more and the Indian swung his frail canoe against the sand and, with a twisting heave, shouldered it and crept into the sheltering willows where with the help of his companions he carefully concealed it. Returning to the spot where he had grounded he obliterated all traces of his landing . . . around the headland, off to the North, strange voices were chanting a litany.

Cavelier de La Salle, in command of a party of French, was swinging into the wilderness of the Lakes.

For months La Salle and his intrepid *voyageurs* had fought off Indian attacks, felled trees, hewed timbers, laid a keel, built a hull and, slowly, a vessel—the *Griffin,* first of the ships on these familiar waters—had taken shape. Historians are in dispute as to her exact dimensions, some saying she was of 45 tons burden, completely rigged, while others are equally insistent she was of 60 tons burden. But, no matter which, she was little more than a cockleshell.

The year was 1679. The day was August 7.

With thirty-four men aboard, and with hostile Iroquois watching from the thickets, she resolutely set her bow

towards the Unknown. Little more than a cockleshell, beset by wind and by storm, she hovered over uncharted seas, across Lake Erie, past where Detroit now is and where, then, the crew provisioned their ship with deer and other wild game, up through the rivers and into Lake Huron, to the Straits of Mackinac and into Lake Michigan to what is now known as Green Bay, where she found harbor and a great quantity of furs.

No Roman conqueror standing on the hills that overlooked Carthage could have felt a greater thrill than was La Salle's as he viewed the pelts thrown into piles at his feet; no Columbus or Cartier, gazing at new lands, could have breathed more deeply than did La Salle as he surveyed the wilderness of water and forest—still unsailed, still untrod, still unbroken to the echo of brave powder.

In an account of the discovery written by Father Louis Hennepin, and printed in London in 1698, it was told:

"M. la Salle, without asking anybody's advice, resolved to send back his ship to Niagara, laden with furs and skins to discharge his debts; our pilot and five men with him were therefore sent back, and ordered to return with all imaginable speed, to join us towards the southern parts of the lake, where we would stay for them among the Illinois. They sailed the 18th of September with a westerly wind, and fired a gun to take their leave. Though the wind was favourable, it was never known what course they steered, nor how they perished. . . ."

The odyssey of the *Griffin* is but one of the high adventures of ships and sailors on these fresh waters—but one of the echoes of musketry and cannon—but one of the dramas whose orchestral accompaniment is the wild

trumpeting of winds riding on the hurricane . . . and all are but incidents in the romance of these Great Lakes where men, ashore and at sea, fight together so cargoes may be won, and carried, and delivered that, everywhere, cities may be built.

If, yesterday, the flow of these waters carried a commerce of romance then, today, the flow of these same waters carries a commerce that, too, is romance. For, after all, the setting is the same. Ships still disappear in the deep depths of Superior; ships still crash against the shores of Lake Huron; ships still keep at anchorage against the treacherous Erie swell.

Only the characters change.

The drama goes on.

Chapter One

A COCKLESHELL SETS FORTH TO CONQUER THE LAKES

SPREAD out on a rough, wooden table and held in place, a sword on one side and a heavy pistol on the other, lay a map. It was a crude drawing of lakes and streams, disproportionate and fanciful, but it fired the minds of the two men bent over it.

"See, there lies the great river," cried one, grim looking for all the carelessness of curls that hung across his shoulders, "and over here to the West, a thousand leagues, perhaps, from the cataract, is Cathay. We will go here,"—he indicated the falls of Niagara—"build a fort and a ship above the cataract and then go into the upper country. First we will see what is there. Afterwards, what is here, beyond the great river."

La Salle swept a hand across the map and waited for his companion to speak. Henry de Tonty, an Italian officer, merely nodded in acquiescence.

De Tonty picked up the heavy pistol, letting the parchment clatter into a sudden roll, and asked:

"When do we start?"

The faintest hint of a smile appeared in the corners of La Salle's thin lips. Tightening the roll of the map he ran his sword into its scabbard and declared:

"We go, immediately."

Outside their hut the autumn sun scattered its rays over Fort Frontenac. Traders and trappers and a few Indians mingled within the stone walls. Like as not a

wench cast an approving eye after the two stalwarts trudging down the narrow roadway—La Salle and de Tonty were off. Their ten-ton ship, manned and provisioned, was waiting. They called it the *Frontenac* and within the hour they were making their way along the shore line of Lake Frontenac (now Ontario) towards Niagara.

Standing on deck and gazing out over the rolling waters La Salle must have reviewed, in his thoughts, the years that had passed since he had come, an adventurer from France, to these new lands. More than ten years had gone since he had sold a grant of land above Montreal that he might outfit himself for a voyage of conquest into the Lakes country. More than ten years of waiting ——

For, in 1668, when he was first ready, he had received word from Governor Courcelles, of Quebec, to act in conjunction with a party of priests from the Seminary of St. Sulpice. Three more canoes were added to the four he had equipped but with priests along it could not be conquest—it had to be exploration. On this trip La Salle had proceeded up the St. Lawrence river, into Lake Ontario and finally had come to an Indian village called Ganastoque, near the mouth of the Niagara river. It was here he heard, for the first time, the thunder of the Falls and where, too, he had become acquainted with Louis Joliet.

From Joliet he had learned of a mighty river off to the West. It was disturbing information because it confirmed stories which had come to him, years before, in Quebec. When first hearing of that river La Salle had dreamed—now, listening to Joliet, he planned. By it he hoped to find a direct route to China, thereby solidifying

France's hold on the commerce of the world. Instantly he changed his plans for accompanying the priests but confided that change in no one. In the village he made friends with the Indians and in exchange for a few trinkets received a Shawnee prisoner who offered to guide him to the mighty stream.

With this detail out of the way he returned to his party and regretfully informed the priests he was returning to Montreal. They tried to dissuade him but to no avail. He asked that mass be sung and having received the sacrament from Father Dollier took his leave.

Through the next two years La Salle wandered in the country south of the Lakes. Although it is not definitely known where he went and what he saw it has been quite firmly established that he penetrated as far as where Louisville now is—and saw the Mississippi.

La Salle dreamed not of empire but of world dominion for France. Conquest, not exploration, was his passion. Ruthless was his nature. Cold were his words. Unpopular was his behavior. Trusting no one but himself he finally returned to Montreal where he sought out Count Frontenac and in him confided only sufficient of his plans to win that powerful friend to the first step in his schemes. That step was control of the Lakes.

So impressed was Frontenac that he personally led an expedition of 400 men and 120 canoes to the site of what is now Kingston, Ontario, where Fort Frontenac was established. With that much done La Salle induced Frontenac to send him to France where, in 1674, he was given a grant of Fort Frontenac and adjacent lands under the stipulation he was to refund to Frontenac for the expense of establishing the fort and, also, was to strengthen it and garrison it at his own expense.

La Salle's *Griffin*, the "Cockleshell That Set Forth to Conquer the Lakes"

Painted by George A. Cuthbertson
Copyright by the Canada Steamship Company

Returning to Canada, La Salle carried out his agreement by erecting a strong stone wall on the land side and by placing numerous cannon along the rocky shore line. He brought cattle from Montreal and, suspicious of the intentions of the English, built scores of canoes to keep in check the hostile Iroquois who had become allies of the British forces in New York.

In 1677 La Salle again visited France and obtained a royal permit to "explore" the western part of New France as far south as Mexico and to have all this territory as his trading area. Under the permit he was authorized to build such forts as were needed providing they were completed within five years, to build ships and to find, if possible, a direct passage to Cathay. Also, he agreed to share his profits with Frontenac.

Willingly he consented to that arrangement. There would be enough for all and it can be reasonably supposed that La Salle realized Frontenac might be lulled to rest by the receipt of his share and while counting it would be unsuspicious of the growing power at his elbow. It is never a new finding that, in riches, power is begotten and, in riches, power is lost.

La Salle, more than any other person, perhaps, recognized the potential wealth in this new world. There was no disloyalty to king or country in his veins but ambition was beating in his brain. It was not too much to expect he might become as powerful in New France as was Louis XIV in Old France.

Then, too, there was the question of his many creditors. It was useful to have Frontenac, now governor of the territory, as his partner. There had been occasions when La Salle had learned the importance of that usefulness; he doubted not there would be other occasions.

In addition to his creditors, he had enemies—many enemies. While he was recognizing wealth there were others who were beginning to see as he saw and who were jealous of the many favors granted him.

Covert in their whisperings in the presence of the Governor they were openly hostile in their discussions with La Salle's creditors. Nor was La Salle unmindful of their influence. As best he could he fortified his back trail by becoming a partner with Governor Frontenac; it was to fortify his wilderness trail that he engaged de Tonty.

While in France securing his trading permit he had become acquainted with the Italian officer through a mutual friend, Prince de Conti, and recognizing a soldier invited de Tonty to cast in with him. For de Tonty it meant adventure; for La Salle, as said, it meant experience in the building of forts. There was much to do and little time—so little time, only five years in which to scatter strongholds about the Lakes.

And, now, these busy, vexing years of preparation were over. La Salle could feel assured that conquest was ahead —after the weariness of long waiting and the drudgery of borrowing.

With his ship, the *Frontenac*, under him he put off from the fort in December, 1678, and on Christmas eve narrowly missed being wrecked off the Bay of Quinte. Another week of rough weather dropped behind before the vessel arrived off Niagara and La Salle, landing, received the consent of the Senecas to follow the portage path around the Falls. More parleying with the Indians gained a reluctant consent to the construction of a vessel above the Falls, as well as a trading post.

Not to be caught unprotected La Salle ordered de

Tonty to fortify the post while he went back up the Niagara river in search of a site for a shipyard in which he could protect the boat during the winter. It was while searching for this site that the pilot—through design, it has been suspected—ran the *Frontenac* on the rocks. A heavy sea demolished the little craft and of its cargo nothing was saved but a few cables and anchors, barring, of course, the supplies which had been portaged around the path.

Through the month that followed everyone—priest and seaman, trapper and trader, de Tonty and La Salle—worked almost unceasingly in building a protection of walls against the growing hostility of the Indians. In February La Salle called his helpers together and told them it would be necessary for him to return to Fort Frontenac to obtain additional supplies.

De Tonty demurred. "You are needed here," he objected.

"So are supplies," snapped La Salle. "No one else can go. There are things to be done that no one, save myself, can do."

Calling for a companion, or two, La Salle set out that same night on a perilous journey across ice and snow, through two hundred and fifty miles of forest, through a country where lurked hostile Indians to Fort Frontenac where he might, if his creditors were willing, obtain the needed equipment.

Of many brave things that was one of the bravest in La Salle's life. A weaker man would have dispatched emissaries in the hope they would be successful. La Salle chose to face zero weather, ice, snow, unbroken trails, a wilderness and savages that he might, in the end, meet

with those who were not at all adverse to putting him in jail as just compensation for his debts.

Reaching the fort—his own fort—no one welcomed him. No prayers were chanted for his safe arrival. Instead, his creditors refused his pleas for supplies. Demanded that he pay what he owed. Threatened him with prison punishment, and all the time he wheedled and bargained. It was not until July was nearing its close that he was able to satisfy everyone.

In the meantime de Tonty, after fortifying the trading post, had proceeded with the building of the *Griffin* and on August 4, when La Salle returned, it was to find his party aboard the vessel in fear of the Indians who were making hostile demonstrations ashore. Twice had the Senecas tried to fire the ship and only the vigilance of de Tonty had prevented the attempts from being successful.

Accompanying La Salle on his return trip were four friars. At the falls Watteau, one of the clergy was left to minister to the needs of the natives while Hennepin, Nibourde and Membre went along with the *voyageurs.* It was Father Hennepin who gave the spelling of Niagara to the English language, he having translated it from the Mohawk designation of Ny-ag-ar-ah. In an account of his travels written for King William III, of Great Britain, he told of the Falls in this fashion:

"Betwixt the Lake Ontario and Erie, there is a vast and prodigious Cadence of Water which falls down after a surprising and astonishing manner insomuch that the Universe does not afford its Parallel. At the foot of this horrible precipice we meet with the River Niagara, which is

not above half a quarter of a League broad, but is wonderfully deep in some places.

"It is so rapid above this Descent that it violently hurls down the wild Beasts while endeavouring to pass it so as to feed on the other side, they not being able to withstand the force of its Current, which inevitably casts them headlong above Six hundred foot . . . the Waters which fall from this vast height do foam and boil after the most hideous manner imaginable, making an outrageous Noise, more terrible than that of Thunder; for when the Wind blows from off the South their dismal roaring may be heard above fifteen Leagues off."

In describing the Great Lakes Hennepin was quite as impressed:

"The great River of St. Lawrence," he wrote, "derives its Source from the Lake Ontario, which is likewise call'd in the Iroquese Languaga, Skandaris; that is to say, a very pretty lake.

"Lake Erie, or Erie-Tejocharontiong, as the Iroquese call it, encloses in its Southern Bank a Tract of Land as large as the Kingdom of France. Betwixt the Lake Erie and Huron there is a Streight thirty Leagues long, which is of equal breadth almost all over, except in the middle, that it enlarges itself by help of another Lake, far less than any of the rest, which is of a circular Form about six Leagues over, according to the Observation of our Pilot. We gave it the Name of Lake Ste Claire, though the Iroquese, who pass over it frequently when they are upon Warlike Expeditions, call it Otsi Keta. The Country which borders upon this most agreeable and charming Streight is a pleasant Champagne Country.

"The Lake Huron was so call'd by the People of Canada, because the savage Hurons, who inhabited the adjacent country, us'd to have their Hair so burn't that their Heads resembled the Heads of Wild Boars. The savages themselves call'd it Lake Karegnondy.

"There is yet another Streight or narrow Canal towards the Upper Lake (that runs into this of Huron) about Five Leagues broad and Fifteen Leagues long, which is interrupted by several Islands, and becomes narrower by degrees, till it comes at the Fall of St. Mary's . . . this Fall is call'd the Fall of St. Mary Missilimakinak.

"The Lake Illinois, in the Native's Language, signifies the Lake of Men; for the word Illinois signifies a Man of full Age in the vigour of his years. It is call'd by the Miami's Mischigonong, that is The Great Lake. The Upper Lake runs from East to West, and may have more than a Hundred and Fifty Leagues in length, Sixty in Breadth, and Five Hundred in circuit. [Author's note: Father Hennepin's estimates were based upon what Indians told him.] We never went quite over it as we did over all the others I've hitherto mention'd; but we sounded some of its greatest Depths, and it resembles the Ocean, having neither Bottom nor Banks.

"I shall not mention the infinite numbers of Rivers that discharge themselves into this prodigious Lake. It were easie to build on the sides of these great Lakes an infinite Number of considerable Towns which might have Communication one with another by Navigation for Five Hundred Leagues together, and by an inconceivable Commerce which would establish itself among 'em."

These were the Lakes La Salle was setting forth in his cockleshell of the *Griffin* to conquer. The *Griffin* was

launched on August 7 and to Father Hennepin, de Tonty and some of La Salle's letters is the world indebted for the record of that first trip. Between de Tonty and the friar there appeared to be some jealousy as to who should be the amanuensis of this voyage and de Tonty, so the friar claimed, tried to destroy his writings. Failing, he appealed to La Salle but his complaints were ignored.

After the vessel was afloat three guns were fired, Te Deum was sung and the few Iroquois who were present at the launching (fearful of another attack, La Salle had timed the launching while most of the warriors were absent from the village in search of beaver) were given brandy and while they were carousing the crew was ordered on board.

Hearing the guns the hunting warriors hurried back and, as Hennepin recorded "were Mightily Surpris'd to see our ship afloat and call'd us 'otkon' that is in their Language 'Most Penetrating Wits.' For they could not apprehend how in so short a time we had been able to build so great a Ship.

"In the meantime, our enemies spread very disadvantageous reports of us in Canada . . . but these reports were still more Prejudicial to M. la Salle, whose creditors without inquiring into the truth of the matter or expecting his return, seiz'd all his effects in Canada even though the property which belong'd to him was worth twice more than all the debts he ow'd."

On the third of September the *Griffin* sailed into Lake Illinois (now Michigan) where La Salle found a party of men he had sent from Fort Frontenac the preceding year and, also, a great quantity of furs. As told in the prologue La Salle immediately ordered the *Griffin* to return with its valuable cargo. He hoped to appease his

creditors and, also, he was keeping faith with Governor Frontenac.

He then led his party into the land of the Illinois where he was successful in bringing about a treaty between the Miami and Illinois tribes. Always watchful of the English, La Salle never ceased in his efforts to block their allies, the Iroquois, and when the Illinois told him the Mississippi was navigable from its source to the sea he became more determined to throw an Indian defense across the continent.

But, even in this utterly remote Indian village, he was not free from his enemies. On the night of his arrival in an Illinois village some hundred and twenty-five leagues south and west of where Chicago now spreads, a Mascountin chief denounced him as an emissary of the Iroquois whose plan it was to destroy the lands of the Illinois, as they had destroyed and scattered the Hurons. All of La Salle's eloquence was needed to dissuade the maddened savages from murdering him and butchering his party. And even after he had placated them his precarious position was made worse by the desertion of six of his men. His little company had dwindled to scarcely more than a score of adventurous spirits removed from their own people by a thousand miles of water, and wilderness, and surrounded by muttering foes.

Realizing that a desperate position demanded a desperate remedy, La Salle ordered de Tonty to begin the construction of Fort Crèvecœur (heartbreak, it meant) and while the Italian officer was felling trees and throwing up palisades La Salle mingled boldly with the chiefs and by his forceful, yet kindly, manner quieted their criticisms. With the fort completed he declared an intention of returning to Fort Frontenac in search of more finan-

cial assistance. He planned to build a ship and float down the Mississippi in his unceasing search for a short, direct route to China.

In March, 1680, and accompanied by three companies and an Indian guide, he set out for Canada. He knew the *Griffin* had been lost and he was hoping, in a last appeal, that his friend Count Frontenac would not turn from him.

Of the *Griffin's* disappearance Hennepin surmised:

"The Ship came to an Anchor to the North of the Lake of the Illinois, where she was seen by some Savages who told us they advised our Men to sail along the Coast, and not towards the middle of the Lake, because of the Sands that make the Navigation dangerous where then is any high Wind.

"Our Pilot was dissatisfy'd, and would steer as he pleas'd, without hearkening to the Advice of the Savages who, generally speaking, have more sense than the Europeans think at first; but the Ship was hardly a League from the Coast when it was toss'd up by a violent Storm in such a manner that our Men were never heard of since; and it is suppos'd that the Ship struck upon a Sand, and was there bury'd."

Other stories have come down the years to the effect that the pilot, and crew, turned traitors once they were away from the dominance of La Salle, beached the ship, sold the furs, and adopted the nomadic life of the forests that claimed so many. But, no matter what the conjectures, the certainty remains that the *Griffin* never came to port.

Because of its smallness and the suddenness of storms it is likely that Hennepin's account, as related to him by

the Indians, is correct. Many ships, one hundred and two hundred times the tonnage of the *Griffin*, have disappeared beneath the waves of these inland seas. And, for more than a hundred years after the *Griffin's* disappearance the Lakes remained unnavigated excepting for the birch canoes of the Indians.

Of La Salle—

Ruthless. Cold. Domineering. History can say what it will of him but it can never say he was not a brave man. He was first of the white men to vision what these Lakes were likely to become. Again and again he returned from the forests to wheedle his creditors and in the few more years that he lived he never lost his passion of conquest for France. That his own men killed him in Louisiana less than ten years after setting out in the *Griffin* to conquer the Lake region only adds to his distinction.

Chapter Two

A TREATY BRINGS PEACE—AND COMMERCE

In his efforts to break the power of the Iroquois, La Salle reaped the harvest of discontent another great Frenchman had sowed.

Seventy-five years before, Samuel de Champlain had accompanied the Hurons and Algonquins in attacking an Iroquois village near Lake Ticonderoga. It was an inconsequential skirmish to Champlain—but far from that in the turning of history's pages. The Iroquois became implacable enemies of the French and allied themselves with the English, thereby forming a human barrier of strong men in protecting the growing English colonies along the Atlantic coast line.

The British treated their savage allies with the greatest respect. As one officer of the times wrote:

"The Iroquois, on starting an expedition, always informed us they expected the usual military honors. Accordingly we always drew out our garrisons. The men presented their pieces as the Indians passed, and the drum beat a march; with less respect the Indians would have been dissatisfied.

"They passed in a single row, one after another, with great gravity and profound silence, and everyone of them, as he passed, took his gun from his shoulder and fired into the ground near the officer's foot."

Because the British were more skillful in bargaining smoke signals were to lift from the hills in the land of the Six Nations in 1760 calling the Iroquois warriors to council. Fort Niagara had fallen; Fort Frontenac had been taken and the red emblem of England was flying above its shattered walls; Montreal had capitulated and peace bells were echoing down the valley of the St. Lawrence . . . Marquis de Vaudreuil, emissary of France, had signed articles releasing all of Canada to the English.

And, in 1763, in a perfumed European court, de Vaudreuil's act was made complete when Louis XV, using the new world as a pawn in the game of kings, carelessly tossed it across the treaty table to George III, of England, in closing the Seven Years' War.

A decaying monarch, Louis was always vexed when circumstances of state took him from the comforting arms of Madame Pompadour. Somehow, these ministers were always bothering him. Always interrupting his play. It was to get so even his friends were not to be trusted. For the time was to come when M. de Chauvelin—Louis was to be greatly put out over M. de Chauvelin.

It was during a game of cards when his friend, sitting at the royal table, suddenly toppled to the floor.

"M. de Chauvelin is ill!" exclaimed a voice.

"'Ill'?" cried Louis, turning coldly to look at the stricken man. "He is dead. Take him away. Spades are trumps, gentlemen."

No one, excepting such a king, could have relinquished, so easily, such an empire as, even then, the New World was known to be. But the scalping knives of the Iroquois and not the goose-quill scrawl of a weak king made over the Lakes from French to English.

With the definite elimination of the French there was no need for continued bidding for the friendship of the tribes. Gifts that had once been freely offered were no longer forthcoming. Supplies were withheld. Traders prowled the forests, robbing the Indians of their furs, and their daughters, and their wives.

Brooding beside his fire, Pontiac, chief of the western tribes, saw the sufferings of his people, counseled with his chiefs and swore them to secrecy. Dispatched emissaries to neighboring tribes, exchanged wampum belts and pledged these other warriors to the same secrecy. Then, summoning all, he harangued them in a flaming speech in which he told of having a vision of the Great Spirit and of having heard a thundering Voice:

"Why do you suffer these dogs dressed in red to dwell among you?"

Lean hands leaped to scalping knives as Pontiac roared his imprecations and cries of rage surged from his listeners. Pontiac cautioned against hasty action—ordered them first to spy out the land. As his task he chose attacking Detroit and there were murmurings of approval—for his choice was against the strongest.

Striking with sudden swiftness on May 1, 1763, Pontiac commanded one of the widest battlefronts in the history of Indian warfare. From Superior to Erie the wilderness rustled with his war parties. In the East only the firm hand and diplomatic mind of Sir William Johnson kept the Iroquois from joining the insurrection; from as far south as the lower reaches of the Mississippi savage eyes were gleaming and looking towards the north. Within ten weeks after the flash of the first gun all the fortified posts on the Lakes west of Detroit were smoldering ruins, their defenders tortured and dead.

Detroit, under command of Major Gladwin, alone withstood the shock of savage attack. Under him Gladwin had eight officers and 120 men, in addition to something less than fifty fur traders who lived within the protection of the fort. For sixteen months they fought off the attacks of thousands of savages and in August, 1764, General Bradstreet, commanding a British army, relieved the torn garrison. From the safety of a village on the Maumee river, fifty miles away, Pontiac sent a taunting message of defiance.

Through the next two years the chief dwelt with the western tribes in the Illinois country and, in 1766, made peace. His wampum belts were accepted and in defeat he became a wanderer until he was murdered in an Indian village, in 1769. As word passed from tribe to tribe of his death his old followers arose in revenge and in the warfare that followed the Illinois, in whose village he was slain, were hunted and scalped, almost to the last one.

Fugitive Illinois were still being pursued in vengeance for Pontiac's death when, in the east, Thomas Jefferson wrote the Declaration of Independence and war again spread its red hand across the new lands. Buckskin leggings and silken shoulders stood together in listening to the call of freedom and, together, the colonists watched, with anxious eyes, the paint pots of the savages.

Over the watershed of the Alleghenies, George Rogers Clark, a young Virginian who had gone into Kentucky, heard of Patrick Henry's ringing defiance "give me liberty or give me death," and sought out the governor. From his bed Henry listened but regretfully told his visitor that Virginia could spare no muskets and no powder, even to protect its own.

Clark continued to plead and finally Henry gave him

a letter to the Council of Virginia. To the council went the tall youth and Clark, crude maps tacked against the wall so all might see, swept his hands together and showed how the colonies would be caught in the British vise—the Indians under Lieutenant Governor Henry Hamilton, closing in from Detroit while the Hessians and the British fleet would be pinching from the north and east.

"We must strike first!" he cried.

The council, its complacency shaken but still not believing, offered a compromise. It agreed to send 500 pounds of powder to Pittsburgh and gave Clark $6,000 in paper script for his treasury. Clark pleaded for more but, even in pleading, was content to know powder horns in Kentucky would not be empty. That fuses would not fizzle over futile barrels.

Clark, his long legs carrying him through wilderness and settlement, rolled up his forces as he pressed forward. With 175 men he set forth, on June 24, 1778, from an island just above the Falls of the Ohio. Kalkaska was his objective—then Vincennes . . . then Detroit!

No bands played for these frontiersmen as they gathered themselves into the boats. A few women, smiling and trying to be brave, huddled together with their children on the banks of the Ohio as their men, grim of visage, gripped the long barrels of their rifles and waited for the command to push away. As they pulled along the shore the sun, shining brightly over their leave-taking, became dark and the Falls of the Ohio were run in the dusk of an eclipse.

Of such stuff was Clark made that he purposed invading a wilderness to sweep it clean of hostile Indians and

tamp down a force of British grenadiers that outnumbered him, many times.

Late in the afternoon of July 4, 1778, Clark saw the fort of Kalkaska and the British flag flying over its ramparts. Reverently he opened an empty provision bag and took from it tattered bits of cloth—colored cloth . . . the Flag of the colonies. As darkness fell the "Big Knives," as his force had become known, crept into the town. There came a shout! The fort was taken! Running in all directions the frontiersmen sifted through the streets, pounded on doors and called on the people to remain inside their homes.

Dawn, with its songs of birds and awakening flowers, found Clark, flanked by his ragged, begrimed followers, sending for the town's leading citizens and pledging their allegiance.

Weeks lengthened into months and Clark, with pitiless severity, trained his recruits into the discipline of his own little force, and all the while maintained a bold front to the Indians who came drifting, from near and far, to view the vanguard of what they thought a great approaching army. Clark, in boldness, encouraged that belief for he did not want them to know that what they saw was all—only a handful against many.

Then came the day when emissaries brought back the word that the British had evacuated Vincennes. In rare humor, Clark dispatched Captain Leonard Helm, and one soldier, to take possession. News of the American "occupation" of the post, which had been abandoned as negligible to British plans, filled Hamilton with rage and the officer set about making plans for its recapture, and the enveloping movement eastward from the Lakes to the sea.

Late in October, with an army of British soldiers and

"Hermaphrodite" Brig, *Ramsey Crooks*, Built at Detroit, in 1836, for the American Fur Company. Length 100 Feet, Beam 28 Feet, Draught 9 Feet, of 247 Tons' Net Burden

Painted by George A. Cuthbertson for the Canada Steamship Lines Historical Association

Indians, he left Detroit. On December 17 he sent a summons of surrender to Captain Helm, and the doughty officer parleyed for almost a full day before drawing up his force of one man to receive his English guests. Winter had set in with a blanketing snowstorm and Hamilton, comfortable in the warmth of Vincennes, dallied. With 500 British regulars and more than a thousand Indians at his command he was not concerned over Clark, and his few score frontiersmen, in Kalkaska.

News of Hamilton's dallying was brought to Clark by friendly Indians. Decision came to him, at once. His cry of "On to Vincennes" reverberated through the narrow, wind-swept streets of Kalkaska and that same night his little company, holding their rifles above their heads so as to keep the powder dry, plunged waist-deep into the freezing waters of a nearby stream. Vincennes was 200 miles away.

Death sat with them at every resting point, lay beside them in every sleeping hour, walked with them on every march—but they pushed forward. Day after day, day after day they plunged through ice and snow, broke the thin crust on swiftly-running streams and forded them, sometimes plunging to their armpits and coming out steadily to press onward, stamping their feet and swinging their arms in desperate efforts to restore warmth to frozen bodies. Provision bags were empty. Hunger clawed at them. They tightened their breeches and kept going.

For eighteen days, shelterless, unblanketed, a good share of the time unfed, but their way was always ahead. And now, between the comforting fires of Vincennes and their lean, bony frames lay a stretch of three miles of forest and water. With his men lying in crumpled

heaps of exhaustion, Clark saw a canoe, filled with Indians. He ordered a chase and the capture brought buffalo meat, corn and some tallow. Fires were lighted. The meat was cooked and hot broth thawed out frozen throats and warmed chilled bodies. The blue imprint of frost faded from thin faces, rifles were again gripped by feeling fingers.

With the fall of darkness Clark dispatched a few rifles to open fire on the fort. The British did not reply. Clark was mystified. He did not know that Hamilton, walled behind his stout logs, thought the firing but a salute from passing Indians.

Not until a British soldier was struck as he lighted a wick and showed himself at a porthole did Hamilton know that the "Big Knives" were there. With an oath he ordered the cannon swung down on the attacking force but Clark's frontiersmen, creeping to within thirty yards of the walls, found the cannon could not be sufficiently lowered to reach them while they, in turn, could hide in the darkness and snipe off the cannoneers as they exposed themselves in the flare of the match in firing their heavy guns.

Just as dawn was lifting Clark withdrew his snipers and through the day firing continued from the protection of the forest. Each side lost, but Hamilton's losses were heavier. As evening approached Hamilton saw that Clark was making preparations to undermine the fort and explode the magazine. A messenger carrying a white flag came through the gates.

In the church a few minutes afterwards there was a strange and dramatic meeting. The two men: Hamilton, his uniform freshly valeted; his collar starched and spotless; his face smooth, ruddy and well fed; his eyes clear;

his stomach satisfied and his clothes still carrying perfume from the dance of two nights before—humbly seated in a chair. Clark, his face covered with a stubbly red beard; shaggy hair reaching down across his forehead and into his eyes; eyes weary from the glare of snow and loss of sleep; stomach fretful because of the strangeness of food and with a bony body trying to fill a torn, dirty uniform of buckskin . . . Hamilton, with 500 British regulars, more than 1,000 Indians and a fort for protection; Clark with little more than a hundred riflemen, all exhausted but, like him, seared by the fire of courageous enterprise.

Hamilton stammering with hopeless words—Clark's voice, insisting: "Surrender. Surrender. Surrender." He dinned his demand into Hamilton's brain until, with a futile gesture, the British officer threw up his hands.

Then, while he was making ready to go to Detroit, the War of Independence came to an end.

Clark having established possession of the Lakes country for the colonies, Benjamin Franklin and his treaty makers were able to drive a better bargain over the counter of peace with the English, in Paris, in 1783.

However, it was not until years after the signing of the treaty that the British relinquished the forts along the Lakes. They maintained garrisons at Oswego, Lewiston, Detroit, Fort Miami, and Schlosser. So intense was the feeling between the countries that Congress, on April 21, 1794, voted to suspend all commercial intercourse with England until the frontier posts had been surrendered. War was threatening when Washington, standing before the popular clamor, notified the Senate:

"As peace ought to be preserved with unremitted zeal before the last recourse which has so often been the

scourge of nations, and cannot fail to check the advancing prosperity of the United States, is contemplated, I have thought proper to nominate, and do hereby nominate, John Jay as envoy extraordinary to his Britannic Majesty."

Jay went to London and while there received a letter from John Randolph, Secretary of State, suggesting that the now familiar waterways should be developed for the pursuits of peace and commerce. The idea did not appeal to the British but Jay's treaty of commerce brought about an evacuation of all the posts.

Meanwhile, commerce had been developing. In 1789, John Fellows, of Sheffield, Mass., saw an opportunity for trade and pushed off from Schenectady, N. Y., with a cargo of tea and tobacco. Reaching Oswego he tied his vessel to a narrow dock near the fort and sought out the red-coated commander.

"I want to go to Canada," he requested.

Curtly the British officer informed him that Canada was not open for trade with rebels. Fellows was ordered to go back from where he came. Indignant the trader stamped out of the fort, turning a stream of defiance over his shoulder as he went. Lifting sail, he went back up the Oswego river, into the Seneca river and to Clyde. Far enough away from the English, he built a log hut, stored his tea and tobacco and then bushed out a sled road to Sodus Bay, in Lake Ontario.

Hiring oxen he dragged his boat overland, dipped it into the lake and crossed, landing at Irondequoit where he sold his goods at a profit. It is recorded as the first trading between the United States and Canada on the Lakes although, probably, there had been smuggling—although not so open—on previous occasions.

With the withdrawal of British troops the first American-built vessel of any size was contracted for, and constructed, at Hanford's Landing, three miles below Rochester, N. Y., in 1798. The ship was built by Eli Granger, was named the *Jemina* and soon after completion was sold to Augustus and Peter B. Porter.

A few more months and schooners were becoming familiar along Ontario's shores and in Ontario's ports. At the close of the century the trade on the lake was greater than on all the other lakes combined. The beginnings of the first connected transportation business were laid by Porter, Barton & Co., when, in 1806, they began portaging around Niagara Falls, building ships, and sailing from Black Rock into Lake Erie and as far west as Detroit and Mackinac. Salt and furs formed their principal bulk.

The first vessel built at Buffalo was the schooner *Surprise*. She was of 25 tons burden and was put into the water about 1804. The schooner *Mary* was built at Erie the same year for Thomas Wilson and was used for trade between that port and Buffalo. In 1808 the schooner *Zephyr* was built on a small hill in Cleveland and hauled to the Cuyahoga river by oxen. She was of 45 tons burden.

In 1797 the United States schooner *Wilkinson* had been built at Detroit and in 1810 she was overhauled and renamed the *Amelia* to be repurchased by the government in 1812, and in 1813 was to form part of Perry's squadron in the Battle of Lake Erie. Perhaps two score other vessels were spreading sails over the inland waters while on remote Superior the schooners *Otter, Perseverance, Recovery,* and *Mink*, and the sloop *Nancy* were engaged in the fur trade. Competition to the English for

furs was being furnished by John Jacob Astor who, in 1808, had established the American Fur Company.

In 1810 the growing lake commerce attracted another group. Alvin Bronson, with his partners, Jacob Townsend and Sheldon Thompson, located a warehouse and forwarding station in Oswego, N. Y., and in 1812, through their influence as well as the influence of Porter, Barton & Co., a commission, appointed by the New York state legislature, arrived in Oswego to explore a canal route between tidewater and the Lakes. The committee consisted of De Witt Clinton, Peter B. Porter, and Thomas Eddy but with the declaration of war between the United States and England their project was temporarily abandoned.

In Washington there was little appreciation of the future importance of the inland seas and the government wasted time instead of gathering itself to withstand attack. In Canada Sir Isaac, lieutenant governor, was alive to the probable future of the waterways and hearing of General Hull's occupation of Detroit and invasion of the Ontario border, he dispatched Colonel Proctor, with such reinforcements as could be spared, to take possession of Amherstburg.

From his rendezvous on Bois Blanc island, in the Detroit river, Tecumseh, an able successor to Pontiac, was impatiently watching. For his part there was no dream of future commerce—he was using British help that his plan of federation of the Indian tribes and possession of the Mississippi valley might come true. While waiting for Brock, who had notified him he would follow Proctor, Tecumseh captured an American patrol at Brownstown, on the American side of the river. Some of Hull's correspondence was taken in the raid and when Brock

read the letters he realized Hull was lacking confidence in his position.

Aided by Tecumseh and 600 Indians, he attacked and Hull, almost as quickly, surrendered. Fort Dearborn, now Chicago, quickly fell and the fort at Mackinac, guarded by a few soldiers, was stormed and taken. Three defeats, coming quickly, brought a roar of rage along the Atlantic seaboard and the government threw together its armies to retrieve the disasters. Control of the Lakes was regained in Perry's victory over Barclay, on Lake Erie, and soon afterwards Tecumseh—with Pontiac the greatest of the Indian chieftains along the Lakes—was killed.

Late in December, 1814, peace was declared and in April, 1817, under terms of an agreement promulgated by President Monroe, "the naval force to be maintained upon the American lakes by His Majesty and the Government of the United States shall henceforth be confined to the following vessels on each side; that is—

"On Lake Ontario, to one vessel, not exceeding 100 tons burden, and armed with one eighteen-pound cannon. On the upper lakes, to two vessels, not exceeding like burden each, and armed with like force. On the waters of Lake Champlain, to one vessel not exceeding like burden, and armed with like force.

"All other armed vessels on those lakes shall be forthwith dismantled and no other vessel of war shall be there built or armed."

This treaty was one of the earliest diplomatic achievements of the American government in laying the foundation for peace with England and Canada on the Great Lakes. The overtures that led to it were made by John Quincy Adams, Minister to Great Britain, and acting under instructions issued by Monroe who was then Secre-

tary of State under President Madison. A hint of it was made during Washington's occupancy of the White House when John Jay was sent to London to negotiate the treaty of commerce.

It was a treaty that brought peace to these lakes and rivers—a peace that has given nations, living side by side, opportunities for developing a commerce greater, many times greater, than the tonnage through the Suez canal, where meet the trails of the world.

Chapter Three

A GREAT FORTUNE BEGINS IN FURS

WITH muskets against the walls and swords gathering rust in their scabbards, the region of the Lakes began its commercial development.

In 1820 the eight states whose borders touch these waters ranked this way:

New York	1,372,812
Pennsylvania	1,049,458
Ohio	581,434
Indiana	147,178
Illinois	55,211
Michigan	8,896
Wisconsin	.....
Minnesota	.....

Michigan, Wisconsin, and Minnesota, with their present millions, were on the far fringe of civilization. Michigan, because of the efforts of Lewis Cass, territorial governor, had succeeded in attracting some settlers but Wisconsin and Minnesota were not even names on the map. Nor territories of sufficient importance to have the dignity of a census enrollment.

Chicago, with its more than 3,000,000, and Detroit, with its present approach to 2,000,000, were but trading posts made up, largely, of French-Canadians and Indians. Realizing the territories would have to grow in circles from definite points Cass set about making treaties with the Indians. At Chicago, at Saginaw, Mich., and at St.

Mary's, in Ohio, he was successful and brought vast stretches of hitherto disputed Lakes territory into the United States.

With these accomplishments he asked permission from the government to take an expedition into the northwest. His party of twenty went to the Superior country and at Sault Ste Marie Cass was confronted by hostile Indians who refused to acknowledge the sovereignty of the American government. Called into parley the savages challenged Cass and departed from the council chamber to run up a British flag over their lodge.

Accompanied by a single interpreter Cass strode to where they were, ripped the flag from its fastenings, and boldly threatened:

"If you persist in such disloyalty to the Great Father in Washington you will feel American heels on your necks. And no British help will come to you."

He walked out, taking the disputed flag with him. A few hours later the Indians, with soft voices and pleas for peace, sought him.

Cass then led his expedition into what is now Northern Michigan and along the southern shores of Superior where mineralogists and geologists in the party made startling discoveries in copper. Returning to Detroit by way of Chicago, Cass gave out the news of the findings and once more the attention of the nation was drawn to the riches of these little traveled lands.

For, from the time of Jacques Cartier, tales had come down the waterways of vast quantities of copper, and gold, and silver that lay, scarcely hidden, along the forest trails of the Chippewas.

In 1545 Cartier had been taken to the hill that rises behind Montreal and from the summit had been shown

the Ottawa river flowing from the north, and he had written:

"The savages that we had with us told us that here was the beginning of Saguenay, and that the country was inhabited, and that from whence came the red copper which they called caignetdaze."

Nearly a century after Cartier, Samuel de Champlain had recorded:

"Shortly after conferring with them about many matters concerning their wares, the Algonquin savage, one of their chiefs, drew from a sack a piece of copper, a foot long, which he gave me. He gave me to understand that there were large quantities where he had taken this, which was on the banks of a river near a great lake. He said that they gathered it in lumps and, having melted it, spread it in sheets, smoothing it with stones."

Again—

In the archives of the Ministère des Colonies there is a letter from Beauharnois and Hocquart, of Quebec, carrying the date line of October 11, 1735, and saying:

"Monseigneur: We have received the letter that you did us the honor of Writing to us on the 15th of May last, to which was appended the report handed you by the Director-General of the mint in France on the assay that you caused to be made in Paris of the copper of Lake Superior, a piece of which we sent you last year.

"In the King's memorial we Informed you of the subsequent discoveries of the Sieur De la Ronde, and of the measures he adopts for prosecuting that Undertaking.

The Information that we gave you is nothing else than extracts from the Letters that He and his son have written us.

"The Sieur La Ronde might have given us more detailed information but, from what he writes to us, There is hardly any reason to doubt the advantages to be derived from that Undertaking, both for himself and for the Colony; at least, He engaged in it in a manner that leaves no doubt."

Once more, and, possibly, because of suspicions Monsieur Hocquart may have entertained concerning Sieur de la Ronde—

Corbin, a carpenter in the employ of la Ronde, wrote to Hocquart:

"The said Corbin left Sault Ste Marie, the place where the Sieur De la Ronde is building his Vessel, on The [blank space in manuscript] May last with two men named Vaudry and LeBeau who were going to meet the Sieur De la Ronde's son. The latter was returning after spending the winter at Chagouamigon. He embarked with Them, and they were followed by two others named Feli and Gobin.

"They took on board a savage at the place called The Cove (L'Anse) near the point of Kienon, who asserted that he had a thorough knowledge of the Mines and of the Copper in the said River, of Tonnagane. After ascending the said River, which they ascended for a distance of about eight leagues from the shore of Lake Superior, they Found a mine about fifteen arpents in length ascending said river, thirty feet from the water's edge and which may be at a height of sixty feet in the Cliff.

"This mine consists of layers or beds five or six inches thick. There are about Fifty of these layers one above the other nearly to the top of the Hill, and they are intersected or Bound together by a Sandy soil without Stones.

"There does not appear to be any break at any part of their Length. At the first Layer near the water, there is a Sort of Stone which is easily broken and which detaches itself from the Copper Without being mixed with it. All these Beds or Layers of Copper run about the Length of fifteen arpents following the course of the River." Corbin adds they "cut some of this Copper with a hatchet at the place where there was a seam; and it appeared quite pure, and that at every place in these fifteen arpents where they bored they found it similar to this; and that on being taken from the Mine it can be forged and worked as easily as lead; that a Spit and several small tools were made out of it Such as Knife handles, Braces for the Carpenters, Foot rules and other Articles, without taking any other trouble than hammering it while cold just as it came out of the Mine."

In the Wisconsin historical collections a summary of other searchings is made on pages 182 and 183 of Volume 19:

"The early fame of Ontonagon River was due to the copper found upon its banks; although the first known mention of the stream alludes to the large sturgeon fishery near its mouth. As early as 1665 reports of copper mines were sent out from Lake Superior by voyageurs and Jesuit missionaries. In 1668 a considerable nugget was sent first to the intendant Talon, and later to the King of France. Hence, on one of the earliest maps, the river is designated

as 'Nantononagon or Talon' but the latter name soon disappeared.

"Aside from the nuggets of copper found, there was a large boulder of virgin copper lying upon the banks of the Ontonagon, some twenty five miles above its mouth. This caused the French to believe that a copper mine might be discovered in the near vicinity. In 1735 Denis de la Ronde, then commandant at Fort Chequamegon, asked the French government for experts to aid in locating these mines.

"Three years later two German miners, father and son named John Adam Forster, explored this vicinity at the instance of la Ronde, and made favorable reports thereon. But a fierce Indian war and the subsequent death of la Ronde, ended the mining projects of the French in the Lake Superior district. The earliest English attempt was that of Alexander Henry and his partners in 1772.

"Douglass Houghton, in his famous geological report of 1841, alludes to this effort, and the lack of scientific knowledge shown in making locations. From Henry's time until the advent of Americans upon Lake Superior, no further effort was apparently made to explore for copper mines. Cass's expedition of 1820 ascended Ontonagon river to the 'copper rock'; Cass, however, lost his way and did not reach the rock."

On territory now within the corporation limits of Duluth, a treaty was made between Cass and the Chippewas, in 1826. Although unsuccessful in his quest for "copper rock" Cass possessed information that had long been collected by the Indians, French, and English and when he bargained for concessions he was thinking of copper, and not of iron—of which nothing was known.

And, while Cass treated for minerals, foundations for one of America's great fortunes were laid in the Superior district. Not in minerals—not in timber lands—not in ships . . . but, in furs.

In 1783, following the peace in Paris, a stocky, red-cheeked German lad of twenty had bargained with Captain Jacob Stout, skipper of an American ship, for passage from London to Baltimore. Sitting across from each other, the rough, pine table of the captain's quarters between them, they argued until the German lad smiled and got to his feet.

Cautiously turning his back, the youth took from inside his clothes a slim packet of money, sorted off the English equivalent to twenty-five dollars and put it down on the table.

"Dot for my passage and my grub," he insisted, holding his heavy fingers on the money.

Captain Stout must have chuckled as he signed the passage papers.

With fifty dollars remaining as his capital, and with seven flutes (of which you will hear more about, later) strapped against a kit containing one suit of clothes, John Jacob Astor pocketed the captain's receipt and went below—into the steerage quarters of the ship.

Aboard the vessel were several Hudson's Bay Company officials. Astor listened to their stories, talked earnestly with all those who would listen, asked questions and made up his mind to engage in this seemingly lucrative business once he reached America.

In January, 1784, with his seven flutes, his other suit of clothes and twenty-five dollars remaining in his pocket, he walked up Broadway, staring in wide-eyed wonder at

the Negroes, the shop windows, the strange men and women . . . those who passed him did not know—nor could he know—that each sturdy step was bringing him closer to more wealth than there was in all the little German town whence he came.

New York was not prosperous in 1784. The wealthy Tory families had moved away after the success of Washington's armies. Sickness was prevalent. Death carts rattled over the cobblestones. But there was work at low pay for all those who sought it. The stout German boy, fashioned by forefathers who had toiled, was not long idle. His brother Heinrich was doing well in a small butcher shop in the Fly Market, was married to a fine frau and was uproariously happy over the coming of his little brother from the homeland.

Nothing would do but Heinrich should take Jacob to George Diederich, a baker in Queen (now Pearl) street. Diederich needed a helper and the younger brother, shrugging his shoulders, told himself it was better to be a baker than a butcher and promised himself he would become neither. But he went to work with his hands and his feet while using his head to make other plans. It was while making them, his glances, straying about the neighborhood, came to rest on the daughter of Sarah Todd, a widow who ran a boarding house near by. The daughter's name, too, was Sarah.

Jacob was inarticulate when Sarah was about and in his stolid German way he was content, of nights, to sit in the kitchen corner, puff at his pipe and follow Sarah with his eyes, all the while arranging her slim body in the furs he would get, when——

For his days in the bakery had not been many. Only

a few weeks of carrying cakes and buns along Broadway when attention was attracted to him. Robert Browne, a fur dealer, needed a clerk and offered Jacob two dollars a week. It was less money than Diederich had been paying but it was an opportunity to learn about furs. Jacob did not ponder long. So well did he do his work that in a few months his employer sent him on a trading trip to near-by towns. He bartered so profitably that when the spring of 1785 came he was commissioned to go into the lands of the Iroquois, the richest fur country in all the State of New York. A little while more and he was marrying Sarah Todd and scarcely were the vows repeated when Browne was sending him to Montreal.

There were trade difficulties with England. Congress had forbidden the importation of furs from Canada and Browne, in receipt of demands from his London correspondents for more furs, saw a loophole in the embargo and pushed Astor through it by instructing him to ship directly from Montreal to London. Hiring passage to Albany, Jacob made the rest of the trip on foot and by canoe.

Browne may have chuckled, as he sat in his counting house and thought of the hardships his young assistant was undergoing, but John Jacob Astor would not have traded places with him. By contact with the people and the country the German youth was becoming as shrewd as the Indians in following the trails and as rugged as the mountains over which he passed. Within a year he was learning the intricate processes of the fur trade so that within another twelve months he was able to take up again the problem of the seven flutes which he had brought with him from England.

During his apprenticeship as a baker's helper there had been no opportunities for selling them and he had been so busy with Browne that he had scarcely given them a thought. But, now, his uncle in London who had sold them to him on long terms was becoming impatient.

Craftily John Jacob decided to fit the flutes into his schemes. On May 22, 1786, he published an advertisement in the New York *Packet*:

> Jacob Astor, No. 81 Queen Street, Two doors from the Friends' Meeting House, has just imported from London an elegant assortment of musical instruments, such as Piano Fortes, spinnets, guitars; the best of violins, German flutes, clarinets, hautboys, fifes; the best Roman violin strings and all other kinds of strings; music boxes and paper, and every other article in the musical line, which he will dispose of for very low terms for cash.

The fact that Sarah had invested her dowry of $300 in the store equipment was not disturbing—musical instruments were readily saleable. There was no mention of furs. Judging by his later handling of affairs, Astor was not ready to tell his real purpose in opening the store and the decoy of the flutes suited his design. For, even while the advertising notice was appearing, he was on his way to the Niagara frontier in search of pelts. On his last trip into the wilderness he had served Browne —now he was serving himself.

Often he was hard pressed for money in those early years and he found borrowing more than a chore. But, with the help of Sarah who had an excellent eye for furs, he always managed to stay out of the Bridewell where, frequently, his brother Heinrich told him he would go in punishment of his debts. Within two and

one half years after his first venture in business he was running an advertisement in the New York *Packet* to this effect:

John Jacob Astor
At No. 81 Queen Street,
Next door, but one, to the Friends' Meeting House,
Has for sale an assortment of
Piano Fortes of the Newest Construction,
made by the best makers in London, which
he will sell at reasonable terms.
He gives cash for all kinds of furs
And has for sale a quantity of Canada
Beavers and Beavering Coating, Raccoon Skins,
and Raccoon Blankets, Muskrat Skins, etc., etc.

In another year he and his wife Sarah were able to buy a home at 40 Little Dock street (it is now a part of Water street) and in their larger quarters they found rooms in which to store the ever-increasing stock of furs. In New York the German immigrant was becoming important for, in that same year of 1790, his name appeared in the city directory for the first time, being:

"Astor, J. J., Fur Trader."

His area of trade was widening. No longer was he content to make trips to Montreal and the Niagara frontier. His family was growing almost as fast as his ambitions. Three children were now clinging to Sarah's skirts and in the late years of the century Jacob, with his pack of trade goods slung over his shoulder, was tramping the wilderness trails to Superior.

His *bateaux* were bringing down his furs to Montreal and with the signing of Jay's treaty of commerce his wealth began growing so rapidly that even he was startled. And, why not?

Strings of beads worth but a few coppers brought fine pelts from the Indians; penny prints made in England for the amusement of the children were coveted as talismans and eagerly bargained for by the savages; the cheapest of cottons, calicos, colored handkerchiefs, stockings, shoes, hats, threads and twines were worth many hundredfold their price over the trading blocks of the Chippewas, Algonquins, and all the rest of the tribes living far from the ocean ports of the white man.

Up beyond Pigeon river, in the far reaches of Lake Superior, Astor made friends with trader and trapper, Indian and *courriers des bois* and it was not long before he was being welcomed by the exiled representatives of the powerful Hudson's Bay Company. They welcomed him to their "long houses," and permitted him to barter little realizing that there was more than good-nature in the apparently guileless German who was always so willing to share the burdens of others so long as he could profit himself in penny. Little did these Hudson's Bay factors realize that, before long, John Jacob Astor, with his American Fur Company, would be a dangerous rival.

His barter bags empty, Jacob returned to New York, confided the profits of his venture to Sarah and moved his business again, this time to 149 Broadway, so that by the end of the century people were beginning to whisper as he passed:

"There goes Astor, the fur trader. Some say he is worth more than two hundred and fifty thousand dollars!"

For, in New York in those days of more than a century ago, that was a great deal of money.

He was beginning to invest in ships and real estate and once again, finding his quarters too small, he moved his business to 71 Liberty street and bought for Sarah,

himself, and the children, a home at 223 Broadway. It was one of seven or eight—perhaps more, perhaps less—of the pretentious homes of New York. No longer did the smell of drying furs seep up through the floor and into the walls where they ate and slept.

The Astors had servants now.

Chapter Four

STEAM COMES TO REPLACE THE SLAPPING SAILS

On April 6, 1808, the name of "Astor, J. J., Fur Trader" gave way to the American Fur Company. A long head on his thick shoulders, Astor supplied all of the capital of $1,000,000. He wanted no shareholders, sharing profits.

Not so many years before, carrying a tray of cakes and buns, he had cried his wares as he searched for customers on Broadway; now as J. J. Astor, he was second only to Stephen Girard, of Philadelphia, as the wealthiest man in the colonies and he could take phlegmatic steps down the same Broadway to see his ships rounding in from the Atlantic towards the bay.

For clippers were also flying his pennants on the broad distances of the Pacific. His captains were known in China; his sailors bartered for smiles in the Sandwich Islands. His furs were paraded by mandarins in Canton just as they were flaunted by ladies in London. Canton and London waited his precious cargoes just as New York watched for the aromatic loads of spices and tea his ships brought from the Orient.

In his slow-thinking mind John Jacob Astor was planning a magnificent enterprise ——

An empire of ships and trade.

The forming of the American Fur Company was his first move. With clear thinking but muddled tongue (no matter how well Astor understood the English language

he could never speak it properly) he went to Washington to talk with Thomas Jefferson. The President of the United States listened and became enthusiastic:

"I consider it a great public acquisition," he assured his guest and Astor, red-faced and beaming, returned to New York secure in the knowledge that persons in high places were applauding him.

He purposed ——

Welding a chain of trading posts along the Great Lakes to the Mississippi and down the Mississippi to St. Louis. That was one plan. The second was a chain of posts stretching westward along the Missouri river, over the "shining mountains" and to the shores of the Pacific. The third was to run down the Columbia river to the Pacific.

He would build a fort at the mouth of the Columbia to protect his property. His ships would use that point as a port for China, while in the interior St. Louis would be the central trading post for the Missouri, Mississippi, and Great Lakes trails.

Through the next four years Astor was busy—very busy—with the working out of his grandiose scheme. By it he would shut off Canada from the Pacific, would join forces in Alaska with the Russian government's operations to the north; together, he and the Russians would slowly strangle the Hudson's Bay Company and the Northwest Fur Company, his two strongest competitors. In furtherance of this plan he organized, in 1810, the Pacific Fur Company, a subsidiary of the American Fur Company, with a capitalization of $200,000, divided into one hundred shares. Perhaps he was not so sure of this venture for he retained but fifty shares, dividing the other half between his Canadian partners and associates.

Astor, always with an eye to the north, was partial to Canadian partners and clerks. He realized where the real menace of rivalry lay and sought to weaken it by coaxing away some of its strength.

Trouble was to be unloaded upon him because of his stubbornness in clinging to an idea. England and the United States were on the verge of war and Astor, stupidly, refused to prepare himself for insurrection within his own ranks. His avariciousness overweighed any sentiment for the land that had given him his opportunity. His attitude indicated that he considered it preposterous that men should put public gain before private wealth.

One of his agents, a British subject, informed the English garrison at Fort Malden that Congress would declare war and this act resulted in the capture of all of General Hull's correspondence by Tecumseh, leading directly to the surrender of Detroit. In addition, this same Astor agent commanded the force that captured the American fort at Mackinac.

Along the frontier Astor's name was mingled with the charge of high treason and had this stubby German appeared in the Lakes country in those rigorous times there is no question but what he would have been shot as a traitor. In New York Jacob volubly protested his innocence, subscribed to war loans, and brokenly referred to his friendship for presidents and legislators.

Yet, as quickly as the war was over, he again pursued his stubborn policy of employing Canadians along the Lakes and using them in his fur adventures. But, in the immediate years, business was poor and was made worse by the practice of the American government in conducting trading posts at strategic points. Astor was behind a growing sentiment for the abandonment of these posts and in

the winter of 1821-22 Congress acted according to his wishes and left the fur trade to private companies. Almost at the same time Jacob was further heartened by the news that the Northwest Company had been absorbed by the Hudson's Bay Company.

The way was now clear for profits—staggering profits of millions every year. Detroit and Mackinac continued to be the American Fur Company's principal trading posts on the Lakes and if private traders crept in representatives of the company knew but a single defense—crush them! The Indians were kept in subjection of debt and whiskey and conditions became so intolerable in the summer of 1825 that Colonel Snelling, military commander of the fort at Detroit, complained to Secretary of War James Barbour:

"He who has the most whiskey generally carries off the most furs . . . there have been delivered, under contract, to the American Fur Company's agent, at Mackinac, 3,300 gallons of whiskey and 2,500 gallons of high wines this past year . . . I will venture to add that an inquiry into the manner in which Indian trade is conducted, especially by the American Fur Company, is a matter of no small importance to the tranquillity of the border."

Army officers, thoroughly aroused over the frequent border depredations of drunken Indians, influenced Congress into enacting a law prohibiting the distribution of alcohol to the savages but company officials defied the government and in one instance, at least, imported a still to manufacture their own corn whiskey.

Complaints were made and pleas of company superintendents that the law merely stated "liquor must not be brought in" were useless. Army officers carried their case to Washington and only powerful influences brought in

by Astor prevented the revocation of the trading permit of the American Fur Company.

Through the next few years Astor was assailed from all sides. There were derelictions within his organization; there were losses where he had not anticipated them; still a young country and intense in its patriotism, Astor's name had become anathematized through almost the length and breadth of the land; there was a rapidly growing popularity in silk, instead of beaver, for hats; prices were declining and the population of the country was beginning to scatter westward to the plains recently acquired in the Louisiana Purchase. . . . Returning to New York from a business trip to London Astor was met at the dock and told of the death of his wife, Sarah.

He was an old man, seventy now, and, somehow, he had muddled his way along the highway almost to the summit of greatness. Sarah, perhaps, was the only one who was ever patient with his strange mixture of slyness and stupidity. The only one, perhaps, who ever really understood him. And she was gone.

Jacob could find little zest in the enterprise to which he had devoted fifty years of his life and nearly all of his stolid thinking. Probably, too, he foresaw the fur trade as a declining business.

"What difference does it make?" he probably inquired of himself. And the answer came, quickly enough: "None." Millions that he had won had been carefully invested in New York City property. He was old. His family had grown. Calling William Astor, his eldest son, to him he gave his decision:

"Villium, I am q'vitting."

A day or so later John Jacob Astor retired from the

American Fur Company. The company was dissolved and split into different names. The year was 1834.

Cartier, Champlain, La Salle, de Tonty, Hennepin, Marquette, Cadillac, Tecumseh, George Rogers Clark, Pontiac, Brock, Perry, Hull, Harrison, Cass—explorer and conqueror, priest and warrior, sailor and soldier . . . and, now, Astor, a merchant, had played his rôle in the unfolding of the drama of the Lakes.

While Astor had been fastening the links in his chain of trading posts, the American government, under President Monroe, had erected and garrisoned Fort Dearborn, then the frontier post of the United States. Fifteen years later, or, in 1833, on the site of this fort, Chicago received its first charter as a city and port of entry. Five years of almost unceasing work followed before the community possessed a safe harbor and in the fall of 1838 the first consignment of grain was shipped to Buffalo. It consisted of thirty-nine bags of wheat.

In October, of the following year, the brig *Osceola* loaded the first bulk cargo of grain shipped from Chicago.

Captain C. E. Sayre, in an article written in an issue of the *Marine Review* in 1908, told of that cargo:

"This memorable cargo, the maiden effort in grain shipment from the Northwest, was 1,678 bushels of wheat. We are told that five days were consumed in getting the cargo on board, fourteen days in making the run to Buffalo, and seven days in discharging the cargo.

"The following season, 1840, Chicago shipped six cargoes of wheat, aggregating 10,000 bushels. During this season the harbor piers were completed, extensive docks and freight houses were constructed, the first grain elevator was built and equipped with a steam elevating

plant and the first United States census showed a population of 4,479. This may be considered the initial year of modern commerce on the Great Lakes."

While Chicago was preening itself two other sections of the Lakes country were threatening each other with violence in a dispute over boundary lines. Ohio, already in the Union, and Michigan, applying for admittance, were snarling like a couple of young puppies over a plate of meat. Ohio wanted territory around the southwestern bend of Lake Erie and magnanimously pointed towards the north country, saying its sulky young rival could have that.

The federal government settled the dispute when Michigan came into the federation in 1836 by giving Ohio the plate of meat and tossing a metaphorical bone in the shape of the Northern Peninsula to Michigan. Grumbling, but casting covetous eyes towards the farming lands on the south, the new commonwealth grudgingly accepted what is now one of the richest ore basins in the world.

And, too, while Astor was building his docks and lodges on Pigeon river in the far Superior country events of lasting importance were happening on Lake Ontario. The war had put a stop to all shipping in the east and two years after the ratification of peace work was started in Sacketts Harbor on the construction of the *Ontario*, first of the American ships of steam propulsion on the Lakes.

Over on the other side, at Finkle's Point, in the Bay of Quinte, the *Frontenac*, a Canadian challenge to the *Ontario*, was being rushed to completion. Work on the *Frontenac* was started earlier but in April, 1817, while the ice floes were still coming from the Upper Lakes, the

Ontario belched a long blast from her whistle, cast off her lines and started from Sacketts Harbor on the first try-out of steam for the long run through the open lake to the mouth of the Niagara river.

The vessel met with favorable weather and calm seas until opposite the Genesee river when a northeast wind blew in, churned up the lake and sent the ship into a dangerous roll. Her paddle wheel shafts were torn from their fastenings and the captain, fearful of the increasing heavy swell, put back to port. That accident taught shipbuilders to fasten the paddle wheel shafts at the outer bearings.

The *Ontario* was 110 feet long on deck, had a beam of 24 feet, an 8½ foot depth of hold and was 237 tons burden. She had a low-pressure engine with a 34-inch cylinder and a 4-foot stroke. She was equipped with two masts and a complete fore-and-aft rig. The *Frontenac* was 170 feet long on deck, had a beam of 32 feet with a registered tonnage of 700. Her paddle wheels had a circumference of 40 feet and she was equipped with three masts and fore-and-aft sails throughout.

The speed of the two boats was about the same—between five and seven miles an hour. Ogdensburg, in New York, and Prescott, in Ontario, were the natural terminals but the *Frontenac*, when first attempting the trip to Prescott, grounded on a shoal in the unchartered Thousand Islands and gave up trying to reach its destination, using Kingston as its eastern terminal, instead, with Toronto and Niagara in the west. Three complete trips each month was the schedule. The *Ontario* ran regularly between Ogdensburg and Lewiston, on the Niagara river, and the opening of this service gave travel on the Lakes a long leap forward.

Water transportation, since the early days of the Phœnicians, had changed but little. Sails and a wind; oars and straining backs—such had served civilization. Columbus, Cartier, the Norsemen—all had come to these lands on the wings of an east wind and their followers, penetrating to the inland seas, adopted the canoe of the Indian, later to build sloops and brigs and schooners.

Steam was looked upon with skepticism and there were many who hooted when the *Ontario* was crippled and forced to turn back to its starting point, depending upon sails to carry it along. For that matter, that was why she was equipped with two masts and a complete fore-and-aft rigging. Railroads were in the early stages of experimentation and the forests were opened by foot, by horse, and by oxen.

Down the St. Lawrence river, some eight or ten years before, a crude side-wheeler, called the *Accommodation*, had operated between Montreal and Quebec. But the *Accommodation* could not encounter the difficulties to be met by the *Ontario* and *Frontenac* on the Lakes. The *Accommodation* ran, for the most part, along a narrow river, protected by high cliffs whereas the *Ontario* and *Frontenac*, going into the open lake, were often unable to find ready shelter from sudden storms. There were no charts, no dredged channels, no breakwaters, no elaborate systems of buoys and ranges, no lighthouses, no fog whistles, no weather bureau warnings.

In 1825 the opening of the Erie canal diverted to the lakes much of the early traffic in settlers going into the west and furnished the impetus for shipbuilding operations on Lake Erie. At the same time the federal government began making small appropriations for harbor improvements in the more important lake ports.

Vessel passages between Ontario and Erie began with the opening of the first Welland canal in 1829. The canal extended from Lake Ontario to Port Robinson on Chippewa creek. The creek emptied into Niagara river nearly two miles above the Falls and at a point where the current was swift. Teams of twelve and sixteen oxen helped pull the schooners and steamers along the shore to Lake Erie. There were forty locks in this first Welland canal. They were built of wood and were 110 feet long, 22 feet wide, and 8 feet deep.

The first steamboat built and operated west of the Niagara river was the *Walk-in-the-Water*. She was put together at Black Rock in 1818 and ran between Black Rock and Detroit. She was 135 feet long, 32 feet in beam and had a depth of 8 feet 6 inches. She was faster than the *Ontario* or the *Frontenac*, being able to muster eight miles an hour. There were accommodations for perhaps 400 passengers.

Buffalo newspapers of the time usually referred to her as "the steamboat" and after a successful three years she struck the shore near Buffalo during a gale in 1821 and was lost. To replace *Walk-in-the-Water* Buffalo shipbuilders launched the *Superior* in the spring of 1822. From that year until 1828 eight steamers were built on Lake Erie.

They were: *Superior* (Buffalo), *Chippewa* (Buffalo), *Niagara* (Black Rock), *Henry Clay* (Black Rock), *Enterprise* (Cleveland), *Pioneer* (Buffalo), *William Penn* (Erie), *William Peacock, Barcelona.* Their tonnage varied from 60 to 400.

Francis A. Dewey, writing in 1881 under the title of "A Sketch of the Marine of Lake Erie Previous to 1829," said all the steamers had steering wheels on their sterns,

none had cabins on deck, and their usual fuel load was twenty to thirty cords of wood. He added that the first steamer on Erie with a cabin on the deck was the *Michigan* (475 tons) launched in Detroit in 1833.

In 1835 there began a period of tremendous activity on Lake Erie. People were crowding towards the new frontiers and from March 15 to November 28 more than 1,900 vessels docked at Cleveland. In May, 1836, 90 steamers arrived at Detroit, all carrying men with bundles and women with babies—coming together to find their fortunes, great and little.

On Ontario other ships were being built. In 1818 the steamer *Sophia* was dipped into the water at Sacketts Harbor while the *Martha Ogden*, also built at Sacketts Harbor, was launched in 1825.

In an issue of the *Marine Review*, Frank R. Rosseel has written:

"In the early 'thirties there appeared steamers with two stacks placed abreast and wide apart and two walking beams working separate paddles, a most unhandy arrangement for the engine room in heavy weather but mighty convenient in working about a harbor in close quarters. Captain Van Cleve presents pictures of two steamers of this type—*United States*, launched at Ogdensburg in 1821 and the *Great Britain*, launched in Prescott about the same time—showing cabins on main decks with awnings spread over upper deck aft, bluff bows with great cutwaters reaching up and down in a broad double curve and profusely ornamented with gilded scroll work.

"I think every steamer for at least the first ten years of steam navigation on the Lakes carried canvas of sufficient area to make it possible to navigate her under sail power

On the Detroit River in the 'Eighties—Ore Schooners Being Towed Down to Open Water

alone. Full-rigged masts, round bluff bows, long overhanging curved stems, heavy bowsprits and squaresterns upon which the steering wheel was placed, all showed evolution from the sailing vessel.

"It is worthy of note that for fifteen years, or more, after the *Frontenac* no other steamboat of anything like as great dimensions appeared on the Lakes. Even the *Michigan* of 1833 was but one hundred and fifty six feet long as against one hundred and seventy for the *Frontenac*. Referring to the handling of the *Ontario*, the other pioneer steamboat (with the *Frontenac*, of course) on the Lakes, Captain Van Cleve said there was no engine room gong for signals from captain to engineer and that orders were repeated by a man who stood outside the engine room door.

"The engineer's name was Ramsey and the captain's oft-repeated orders 'Give her a kick ahead, Mr. Ramsey,' 'Give her a kick astern, Mr. Ramsey' came to be bywords aboard.

"On one occasion when there was a devil of a time bringing her alongside a wharf some wag shouted:

" 'Give her a kick sideways, Mr. Ramsey.' "

The *Ontario* was hauled out of the water and broken up at Oswego in 1832 while the *Frontenac* met a tragic end, being burned in the Niagara river in 1827.

The first steamboat appeared on Lake Michigan in 1826, or 1827, historians being in dispute as to which year. It carried an excursion to Green Bay and these pleasure trips were continued as a novelty through the following five or six years. In 1833 there were eleven steamboats traversing Erie, Huron, and Michigan and in that same year more than 50,000 passengers, nearly all settlers

to the Lake regions, were transported from Buffalo to points as far west as Chicago.

By 1839 the increase in business was so great that a regular line of eight boats operated from Buffalo, each trip to Chicago requiring sixteen days. Freight was beginning to be handled and cost sheets on shipping are interesting not only because of the charges but for the information furnished as to what merchandise comprised the principle bulk.

Prices in 1837 from Lake Erie ports to Buffalo were:

Flour, per bbl., 80 cents; ashes, provisions and whiskey, per 100 lbs., 50 cents; grass seed, per 100 lbs., 60 cents; tobacco, per 100 lbs., 60 cents; corn and wheat, per bushel of 60 lbs., 25 cents; feathers, furs, and all light articles, per 100 lbs., $1.10; wool and hemp, per 100 lbs., $1.

All goods for the Upper Lakes had to arrive in Buffalo by September 15 and for ports on Lake Erie by October 15.

Writing for the Buffalo Historical Society, Captain James Van Cleve tells of the *Vandalia*, first propeller on the Lakes:

"While on a visit to New York in December, 1840, I was called upon by Josiah T. Marshall, formerly of the firm of Bronson, Marshall & Co., of Oswego, who told me that a friend named Sanderson, in Brockville, Ont., had asked him to examine Ericsson's propeller and give his opinion as to its application for propelling boats on the Rideau canal.

" 'I don't know anything about propellers and I am wondering if you will go with me,' said Marshall.

"We went to the engine works of Hugg & Delemater and looked at a propeller which was hung from a shaft.

I looked at it very carefully and told Mr. Marshall that in my opinion its application would revolutionize steam marine on the Lakes, as well as the canals. He then introduced me to Captain John Ericsson, the inventor, who had rooms at the Astor House.

"After a conversation with Captain Ericsson regarding traffic on the Lakes the inventor became excited and walking up and down the room made me the following proposition:

" 'Van Cleve, if you will put a vessel in operation with my propeller, and do it within the year, I will assign to you one-half interest in my patent for all the North American Lakes.'

"I accepted the proposition. The papers were drawn and I left for Oswego. I concluded an arrangement with Sylvester Doolittle for building a vessel. Doolittle then owned a shipbuilding plant in Oswego. Interested with me were: Captain James Brown, Bronson & Crocker and Captain Rufus Hawkins. This vessel was named the *Vandalia.* She was sloop-rigged and made her first trip in November, 1841, to the head of Lake Ontario. Her dimensions were ninety one feet on deck, twenty feet, two inches in beam, and eight feet, three inches in depth of hold with 138 tons burden.

"The first screw wheel steamers built west of Lake Ontario came out on Lake Erie in 1843. They were the *Samson* and *Hercules.* It was some time, however, before the screw wheel began to supplant paddle wheels on these fresh waters."

The propeller *Empire*, built by Captain George Washington Jones in Cleveland in 1841, was the first boat

launched in what was to become a general practice on the Lakes—sideways.

Steamers were beginning to come but, because of the difficulty of getting beyond the Falls of St. Mary's, the Superior country was a little known territory prior to the "discovery of copper" in 1843. From 1815 until 1822 the greatest of the lakes was navigated by but one schooner, bearing the British flag and commanded by Lieutenant Bayfield, who made one of the first accurate charts of the lake.

Prior to 1815 the Northwest Fur Company and the Hudson's Bay Company had built a few sloops and schooners to bring out their furs, and along in 1834 the American Fur Company brought timbers out of Black River, Ohio, and shipped them to Sault Ste Marie where a vessel, called the *John Jacob Astor*, was built. It was the first ship to fly the American flag over the cold, clear waters. Captain Charles C. Stanard was placed in command and he sailed the ship until 1842.

In the rush for copper prospectors were compelled to make the trip from Sault Ste Marie to the mouth of the Ontonagon river in birch bark canoes, or *batteaux*, the latter having been introduced on Lake Superior from the St. Lawrence river, by the Hudson's Bay Company. These boats were all open, without decks, and were propelled by paddles and sails. They followed the coast line and came ashore at nights or by day, when storms blew in. The impatience of prospectors to reach the copper country was the cause for steamboats being introduced on Superior when they were. An account of that event has been preserved in the Michigan Pioneer Collections in the form of an article written by Lewis Marvill, of Parkville, Mich.

In part, he tells:

"In the spring of 1845 a little tub of a sloop of about 15 tons was transformed at Detroit into a fore-and-aft, called the *Ocean.* The top-sail schooner *Merchant*, of about 75 tons, and the *Ocean* were both fitted out for Lake Superior trade. I shipped on the *Merchant* and we took on board all the necessery material for taking both vessels over the rapids.

"We fell to and jerked the *Ocean* over in short meter, and then tackled the *Merchant.* Both were taken over on rollers, the same as buildings are sometimes moved. When we had the *Merchant* about half way across, the steamer *Independence* arrived from Chicago. A part of the crew of the *Merchant* quit and left her, and I secured the berth of porter on the *Independence.*

"In about seven weeks she was hauled over and launched in the river above the falls. There were many delays and it was quite late in the fall when we sailed. We steamed up the lake and the first place we touched at was Copper Harbor, or Fort Wilkins, where we found a small garrison and several huts. The next in order was Eagle Harbor, where there were a few prospectors, and then on to Eagle river where we discharged most of our cargo, but before we could throw off some 50 kegs of powder the wind raised from the Northwest and kicked up such a sea that we had to weigh anchor and leave.

"We shaped our course for La Pointe, but had to turn about and run before the wind. We made for the lee of Keweenaw point, and laid by for three of four days. We again set sail, reached Eagle river and steamed to La Pointe, where we gave the natives a dreadful scare with the appearance of our craft and the noise of our steam whistle. We returned to the Sault, and laid up for the winter in company with the *Ocean, Chippewa, Algonquin,*

Swallow, *Merchant* and *Napoleon.* The tonnage of the *Independence* was 375—more than the tonnage of all the others, combined. The first steamer that ever ploughed Lake Superior thus ended her memorable trip.

"We found below the Falls the steamer *Baltimore,* which was hauled over in the winter or early spring. The *Napoleon* was fitted up with engines the next summer. The *Julia Palmer*, which has often been named as the first steamer on Lake Superior was not the first, nor second and, I doubt, if she was even third."

With Superior opened, steam traffickers began plowing all the Lakes.

Chapter Five

COPPER AND IRON—AND THE RUSH IS ON

THE rush was on.

Prospectors, eyes fevered with the nearness of sudden wealth, were storming the portal to the Superior country. At Sault Ste Marie men, strong and weak, clamored in turbulent thousands for passage to the copper ranges along Superior's southern shores. All their possessions strapped to their backs, their pitiful little picks —with which they were going to assault mountains— fastened to their belts, they were invading the north country and hardship.

The message that brought them was a carefully written report by Douglas Houghton. In 1837 Houghton was appointed first of Michigan's state geologists and one of his initial requests to Governor Mason was for permission to survey the Upper Peninsula and substantiate, or throw out, the findings of Lewis Cass.

Using a birch bark canoe Houghton made five trips along the rocky shores and his experienced eyes saw more than Cass, or any of those who had gone before, had ever dreamed. Here was wealth—almost incalculable wealth. A state official, Houghton was deeply concerned. Accurately he foresaw the rush to these fairly inaccessible regions, once his report was written and published. He knew that men—many, many men—would die in frantic endeavors to wring riches from the unyielding ranges. He

knew only modern mining machinery would separate the red metal from its fastenings of untold centuries.

With this knowledge always before him he wrote his report, using careful words of caution and developing a conservatism that, so he hoped, would be a warning to all casual prospectors. But, the geologist had to speak the truth and the truth of the existence of millions and millions in copper could not be dimmed by his most conservative language. What he feared happened.

Men stampeded. Froze to death. Died from starvation. Claims that were staked in the high flush of victory were abandoned in the cold reality of despair. The copper ranges flaunted their secret and kept it, too. Houghton, himself, lost his life in the waters of Superior.

On the night of October 13, 1845, he was making his way in an open Mackinac sailboat to Eagle river. A snowstorm rode in on a gale of wind and his companions urged him to go ashore, rather than attempt to round a low, broken promontory reaching into the lake. Confident in his boatmen, as well as in himself, Houghton laughed at their fears and urged them forward.

A few minutes later the boat was capsized by the wind and all were thrown into the waters. A faithful half-breed called Peter caught the geologist as he came to the surface and swung him around so he could cling to the boat.

"Never mind me, but get ashore," ordered Houghton.

They did not leave him. Struggling in the icy waters they righted the craft and all sought the oars. They were safe for only a moment. A huge wave caught the boat under its stern and turned it over endwise. Two of the crew were thrown out on the beach. Only they were saved.

The following spring, close to the shore, the body of the man who was first to realize the wealth of the copper country was found. He was only thirty-four years old when he died and between the ages of twenty-one and thirty he had been twice mayor of Detroit and once had been offered the presidency of the University of Michigan.

In that same year occurred a tragedy that could have happened only on Superior, where distances are wide. The Isle Royale, with its desolateness of forty miles from the mainland, was the setting. The woman's name was Angelique and she was the Indian wife of a Frenchman named Charley Mott. In stark crudity of words she told:

"When I and my husband Charlie Mott were first married we lived at La Pointe. Mr. Douglas, Mr. Barnard and some other 'big bugs' from Detroit had come up there in a schooner [*Algonquin*] looking for copper. From La Pointe Charlie and I went over with them, on their invitation, to Isle Royale. After landing with the rest I wandered a long way on the beach until I saw something shining in the water. It was a piece of mass copper.

"When I told the Algonquin people about it they were very glad and determined at once to locate it. They said if Charlie and I would occupy it for them Charlie should have $25 a month and I $5 a month to cook for him. Having agreed to the bargain we returned to the Sault to lay in a good supply of provisions.

"Five days before Christmas (for you may be sure we kept track of every day) everything was gone. There was not so much as a single bean. The snow had come down thick and heavy. It was bitter, bitter cold and everything was frozen as hard as stone. We couldn't dig any roots; we drew our belts tighter and tighter; but it was

no use; you can't cheat hunger; you can't fill up that inward craving that gnaws within you like a wolf.

"Charlie suffered from it even worse than I did. As he grew weaker and weaker he lost all heart and courage. Then, fever set in; it grew higher and higher until at last he went clear out of his head. One day he sprang up and seized the butcher knife and began to sharpen it on a whetstone.

" 'Tired of being hungry,' he said. 'Will kill a sheep —something to eat I must have.'

"I saw that I was the sheep he intended to kill and eat. All day, and all night long I watched him and kept my eyes on him, not daring to sleep, and expecting him to spring upon me at any moment; but at last I managed to wrest the knife from him and that danger was over. After the fever fits were gone and he came to himself he was as kind as ever. I saw him sink away and dry up until there was nothing left of him but skin and bones.

"For more than a week I had nothing to eat but bark, and how I prayed that night. The next morning, when I opened my door, I noticed for the first time some rabbit tracks. In a moment I had torn a lock of hair out of my head and was plaiting strands to make a snare for them. As I set it I prayed that I might catch a fat one and catch him quick. That very day I caught one, and so raging hungry was I that I tore off his skin and ate him up raw.

"It was nearly a week before I caught another, and so it was often for weeks together. The thing that seemed so very strange to me that though I had torn out half the hair of my head to make snares never once did I catch two rabbits at once. Oh, how heavily the time did hang on me. When I sat still for an hour or two my limbs were so stiff and dried up that it was almost impossible for me

to move at all; so, at last, like a bear in a cage I found myself walking all the time.

"Early in March I found a canoe that had been cast ashore and which I mended and made fit for use. Part of the sail I cut up and made into strips for a net. Soon the little birds began to come. One morning, in May, I had good luck fishing and caught no less than four mullets, at one time. Just as I was cooking them I heard a gun. Then another gun. I started to run but my knees gave way and I fell."

Tragedy, in a hood, has ever stalked with conquest.

Of a sudden, almost, iron was discovered near by to the copper ranges. On September 19, 1844, a party of surveyors under William A. Burt, were running the east line of township 47 north, range 27 west, when they were puzzled by the strange fluctuations of the needle in the solar compass. The instrument had been invented by Burt and when the needle showed a variation of 87 degrees, he became excited and cried:

"Look around, boys. See what you can find."

Besides Burt the party consisted of William Ives, compass man; Jacob Houghton, barometer man; H. Mellen, James King, R. S. Mellen and two Indians named Michael Doner and John Taylor. Each man scattered and all made similar discoveries—there were outcroppings of iron ore . . . almost everywhere!

Scarcely more than the turning of the sod was necessary to reveal them. Peculiarly enough, not a single member of the party staked out a claim. Perhaps the inaccessibility of the region convinced them it was not worth while.

However, they did make mention of their finding in

their reports and, singularly enough, no one paid any attention to it. Returning to Sault Ste Marie they made a joke of their difficulties with the compass and one who overheard the telling was Louis Nolan, a half-breed. Another to whom they told the story was Marji Gesick, an old Indian chief living at the mouth of the Carp river.

In the spring of 1845 P. M. Everett came to the Sault. At his home in Jackson, Mich., Everett had become interested in reports of copper and silver in the Superior country and as he provisioned at Sault Ste Marie he became acquainted with Nolan. The half-breed told him of the iron deposits and offered to guide Everett to them. Nolan went as far as Teal river before admitting failure, and Everett, in disgust, shifted his plans and struck across country for Copper Harbor.

On the way he met Marji Gesick and once again changed his route. The chief was willing to locate the iron but unwilling to conduct Everett to it. Wheedling and bargaining, the white man argued the Indian into accompanying the party but nearing the deposits Marji Gesick refused to go further. In superstition he told Everett that the Great Spirit dwelt in the iron mountains but he was willing to trace the trail to them.

On the floor of the forest he scraped the route, using a stick to indicate the trees and the valleys and, finally, the ore ledges. Everett remained with him, sending on S. T. Carr and E. S. Rockwell, two members of his party.

In a letter to Captain G. D. Johnson, dated at Jackson, November 10, 1845, Everett wrote:

"I left here on July 23 last and was gone until October 24. I had considerable difficulty in getting anyone to join me in the enterprise but I at last succeeded in forming a

company of thirteen. I was appointed treasurer and agent to explore and make locations, for which last purpose we had received seven grants from the Secretary of War. I took four men with me from Jackson and hired a guide at the Sault, where I bought a boat and coasted up the lake to Copper Harbor, which is over 300 miles from Sault Ste Marie.

"There are no white men on Lake Superior except those who go there for mining purposes. We incurred many dangers and hardships. We made several locations, one of which we called Iron at the time. It is a mountain of solid iron ore, 150 feet high. The ore looks as bright as a bar of iron just broken. Since coming home we have had some of it smelted and find it produced iron and something resembling gold—some say it is gold and copper. Our location is one mile square and we shall send a company of men up in the spring to begin operations. Our company is called the Jackson Mining Company."

Another location the Indian chief pointed out was the Cleveland mountain and in reward for his help Marji Gesick was given this written agreement:

"River du Mort, May 30, 1846.

"This may certify that in consideration for the services rendered by Marji Gesick, a Chippewa Indian, in hunting ores of location No. 593 of the Jackson Mining Company, that he is entitled to twelve undivided one-hundredths part of the interest of said mining company in said location No.

"A. V. Berry, Superintendent.
"F. W. Kirtland, Secretary."

Through the next year Everett tried to develop the property. After a struggle he got together sufficient interest to build a forge. Tools had to be packed in from the outside and a winter of heavy snow was on them before the forge was ready.

On February 10, 1847, Ariel N. Barney made the first iron in the Superior district.

Perhaps we can reconstruct the setting:

Behind their little open forge lay the Carp river, silent under its thick coating of ice—overhead, the branches of the trees, stripped of their leaves and swinging in the wind—around them, snow, deep snow, so white it hurt their eyes and so dry that when the cold winds ride in from across Superior the particles sting and cut into their faces like so many tiny lashes ——

Barney, upper lip unshaven but with a heavy beard protecting his throat and reaching down across his collar, is standing before the open forge while the others, in a silent group, are watching. A few shovelsful of the ore have been mixed with limestone and charcoal and put into the fire. There is a blast on one side of the forge and now air has been pumped through the blast for six hours.

In the bottom of the forge Barney can see a dark, heavy, spongy mass and he knows there is iron—how good, or how much, he does not know and a little prayer falls from his lips as he steps back. The others watch. He lifts out the dark, heavy, spongy mass and while it is still hot he swings down a hammer—swings and swings and swings until he has forged a bloom. It is about four inches square and about two feet long.

For a few anxious minutes they all crowd about him; then a cheer that echoes almost to the hills of Marquette, miles away, rings out. For Barney tells them the bloom is

of the best. There can be no mistake. A little while, perhaps in a year, or two, and they will all be rich, for in his experience he feels that nowhere is there such iron as this.

But—disappointment was to reach out and touch them all. Marji Gesick, the lone Indian, Everett, Barney, Berry, Kirtland—all of them, one by one. An early melting of winter snows and ice turned Carp river into a swollen stream and the crude forge was swept away. The iron was taken out, when weather permitted, and sold to E. B. Ward, a vessel owner who converted it into a walking beam for the steamer *Ocean.*

Everett returned to the mine in the summer of 1848 and rebuilt the forge. Before the year was over about six tons of iron were being made daily and were being hauled out by two six-horse teams to Marquette, ten miles away. But, with success nodding and fortunes seemingly within their grasps, the fickleness of their position became apparent. Heavy rains fell, making roads impassable; it became impossible for them to get charcoal without having to put up with long, tedious waits; all their supplies had to be carried in on the backs of Indians and the Carp river, with the coming of a dry spell following the rains, dropped so low as to shut off power.

The optimistic Everett clung to his hopes and encouraged them by saying "conditions can't be any worse" but, somehow, they always did get worse. Difficulties Everett could not foresee flooded in on them and after months of discouragement they decided to abandon the workings. The old Indian chief, Marji Gesick, died without the wealth he had expected—and believed it just punishment for betraying the Great Spirit; Everett and his backers lost nearly all they had ventured.

Meanwhile the mine had attracted the attention of Robert J. Graveraet, of Mackinac, and Graveraet approached Dr. Edward Clark, of Worcester, Mass., who was in Mackinac in the interest of Waterman A. Fisher, also of Worcester. Fisher had sent Clark to Northern Michigan in search of copper lands but Graveraet talked so long and so enthusiastically of the iron ore discoveries near the Carp river that Clark agreed to investigate them.

At the Jackson forge they met three members of the Everett party who were holding possession of the property and obtained a bloom of iron and some ore samples. Clark then went back to Worcester where the iron was drawn into wire at Fisher's suggestion and its excellent quality became apparent, immediately.

Graveraet, after weeks of waiting, became impatient and set out for Worcester. He walked on snowshoes from Marquette to Saginaw, a distance of several hundred miles and from there, by coach and by train, reached Worcester. He made a favorable impression on Fisher and the eastern capitalist consented to the advancement of sufficient capital to resume the operations. Graveraet offered security in the form of leases which he had obtained from members of Everett's company and in March, 1849, the Marquette Iron Company was formed. It consisted of W. A. Fisher, A. R. Harlow, E. B. Clark, and R. J. Graveraet. Harlow was a practical mechanic who had been induced to join with them.

A month later they were organizing their expedition at Sault Ste Marie and with arrangements completed they set out in a Mackinaw barge across the lake. After eight days of sailing, rowing, and poling they were at the mouth of the Carp river. The following morning

Before the Bulk Carrier Came to the Lakes, the *Cora A.* of Michigan City on Her Way Down with Iron Ore from Marquette

Graveraet distributed packs that were to be carried twelve miles to the mine. In single file they set out across the rugged country.

After they had gone some two miles Graveraet noticed one lad wilting under his load. Swinging alongside the leader reached out and lifted the pack from the youth's shoulder's laughing as he did so:

"Jump up, Peter. I'll carry you, too."

Peter White, of Marquette, resented that invitation with every minute of his age of nineteen years. But he made no reply other than to increase his stride to keep pace with the giant who carried two packs as easily, seemingly, as he carried one.

After they had stopped for lunch Graveraet again reached for White's pack but the lad stopped him.

"I will carry my own load, sir," was all White said.

And through the years that followed Peter White carried many a load—as you will know, later.

Chapter Six

WHEN TRADE CALLS MEN COME

EVERYWHERE and always, on land and sea, when trade calls men come.

Prior to 1845, two vessels were sufficient to carry needed supplies to Sault Ste Marie. They were the brig, *Ramsey Crooks*, built by the American Fur Company, and the schooner, *General Warren*. Barring an occasional steamer transporting soldiers and munitions to the forts, the two small sailing craft formed the only commercial link between the lower lakes and the North. And, even for them, the problem of bringing supplies to Sault Ste Marie was a difficult one.

Below the Soo a sand bar reached across St. Mary's river preventing easy approach to the community. The American Fur Company had answered this problem by building a crib on either side of the sand bar and lifting its brig, or the schooner, over into deeper waters. When cargoes were too heavy they were lightered into canoes and the ships reloaded after the passage. But the rush for copper and iron lands could not be ignored. Larger ships than the *Ramsey Crooks* and *General Warren* were beginning to come.

In 1845 Captain E. B. Ward put the steamer *Detroit*, a side-wheeler, on the route between Detroit and Sault Ste Marie. In 1846 the steamer *Ben Franklin* also began regular trips and quickly there followed the *Northerner, Tecumseh, London, Albany, Illinois, North Star, E. K.*

Collins, and two propellers, the *Goliath* and *Peninsular.* Smoke signals of commerce were drifting into the horizon. The far lands were beckoning across the white waters of the Rapids of St. Mary's, guarding the entrance to Lake Superior. And here, for years, cargo carriers admitted an impasse.

The tediousness of the sand bar, and the crib, and the lighters was as nothing compared with trying to force a way through the rushing rapids. Ships, in cargo, stayed above, or below. Their loads were portaged around the roaring torrent sweeping down from Superior. In this situation Sheldon Knight, employed by the government in the issuance of mining permits at Sault Ste Marie, saw an opportunity and began portaging cargoes into and from Superior. His equipment consisted of one car pulled by one horse.

That equipage also sufficed for the commerce of 1845 but in the spring of 1846 MacKnight built a small warehouse and dock below the rapids and found a partner, named L. W. Tinker. The firm was called L. W. Tinker & Co., and it added two double teams and two wagons to meet the growing demands. In the winter of 1848-49 the partnership was dissolved and MacKnight engaged J. T. Whiting to take charge of the work, adding two more teams of horses and two more carts to the portaging facilities. Mass copper was now coming down from Superior.

In 1850 MacKnight organized the Chippewa Portage Company and a light tram road was constructed across the portage. It was operated by horses and connected with docks and warehouses, now built, at both ends. Working twenty-four hours each day the company was able to transfer 400 tons of freight, and was at the limit of its facili-

ties. But, years before, men had begun to talk of building a canal. No one of them could look ahead a hundred years and foresee a daily freight movement of 400,000 tons through this same St. Mary's river but some of them did know a canal was an imperative improvement; for, already, along these lakes canals had been built that commerce might grow.

In 1812 the legislature of the State of New York had authorized the borrowing of $5,000,000 in Europe for the construction of the Erie canal and surveys were under way when war with England halted their progress. In 1814 the legislature repealed the loan enactment but with the closing of hostilities De Witt Clinton again supported the project but was leading a losing fight when strong opposition from an unexpected and interfering quarter was turned to his account.

The state committee of revision was preparing to poll a negative vote (as was afterwards disclosed) when Daniel D. Tompkins, Vice President of the United States, walked into the room. Apologizing for his presence the Vice President declared:

"I am informed that you are discussing the building of a canal across the state of New York—a canal that will connect the lakes with tidewater."

"We are," curtly answered one of the committee members who, like the rest, was indignant over the intrusion.

Tompkins then launched into a tirade against the state legislature for even considering such a measure and closed his talk by informing his listeners that within two years the United States would again be at war with England and "the nation would need all its resources to prosecute the impending conflict."

"Do you believe that?" they questioned.

"I do," snapped the Vice President, and left the room.

The interference so angered the members of the board that instead of serving as a deterrent it resulted in an immediate vote and the bill was favorably reported out of the committee.

Proposals for the building of the canal were heard at a meeting in Utica on June 3, 1817, and on July 4, amid the booming of cannon in an Independence Day celebration in the city of Rome, the first spadeful of dirt was thrown aside. The Erie canal was under way.

It was built in three sections. The middle section, started first, was finished July 4, 1820; the eastern section was completed October 8, 1823; and the western section on October 26, 1825. The length of the artificial route was 363 miles and, barring one in China, the Erie became the longest canal in the world. Its cost was $7,600,000 and the first vessel through the locks was the *Seneca Chief* which left Buffalo October 26, 1825, and arrived in Albany November 2.

While work was being rushed on this waterway the Canadian and American governments were inquiring into the advantages of building locks around Niagara Falls. Tompkins' prediction of an early resumption of hostilities with England had not come true and in 1821 the Provincial Parliament of Upper Canada enacted a measure "to explore, survey and level the most practicable routes of opening a communication by canals and lakes between Lake Erie and the eastern boundaries of the Province of Ontario."

Two members of a Canadian committee were sent to meet with the canal commissioners of the State of New York and after a visit to the Erie canal the Canadians endeavored to engage engineers. They were unsuccess-

ful in finding the experience they wanted and returned to Canada to award the contract for the Welland canal, connecting Lakes Ontario and Erie, to Valentine Gill.

Work was begun in the early summer of 1822 and the design called for a waterway 40 feet wide at the bottom, 60 feet wide at the top, and 7 feet deep. The locks were to be 100 feet long, and 22 feet wide in the clear. It was estimated that this channel would accommodate brigs and schooners up to 100 tons and later, by enlarging the locks to their proper size, that steamers could be passed through.

As operations progressed changes were made. A private company took over the enterprise and the Canadian government granted a number of loans in addition to purchasing hundreds of thousands of dollars' worth of the company's stock. It was actuated into giving this financial help by the report of one of its commissioners, which stated:

"The superior advantages attending such a canal, as is here proposed, would destroy the hopes and defeat the calculations of the commissioners of the American canal; as our being enabled to ship commodities on the Ouse (Grand River) three weeks before the lake opens at Fort Erie and Buffalo, with a certainty of their being transferred without removal direct to Montreal, would give a preference to that route and our trade with much of that from the south shore of Lake Erie would thereby be secured by us."

In 1829, a few months more than seven years after the starting of the work, two schooners, the *Ann* and *Jane*,

and the *R. H. Boughton* (each of about 85 tons burden) went through the locks.

So, with the Erie and Welland canals in operation, those who were agitating the building of locks at Sault Ste Marie had profitable precedents with which to influence state and national governments.

In 1837 Governor Mason, in his first message to the legislature of Michigan, advocated building a canal by the state and a measure was passed providing for a survey of the St. Mary's river district immediately adjacent to Lake Superior. Engineers investigated and recommended a canal 75 feet wide, 10 feet deep, and with locks 100 feet long. There were to be two locks of similar dimensions, and the total cost was given a close estimate of $112,544.

In 1839 a law was passed authorizing certain state commissioners to contract for the size-mentioned canal. Surveyors went to Sault Ste Marie and began sighting their distances. The fact that they were encroaching on a military reservation did not disturb them; rather, in the light of quickly-happening events it added zest to their work.

Scarcely had they started when the commandant of the post, in true soldierly language, ordered them to quit. In equally as violent words the engineers returned the compliments and supported their vehement contempt by waving a permit, signed by the Governor of the Sovereign State of Michigan, under the officer's nose.

The representative of the military forces of the United States staged an orderly retreat but warned the engineers, as he departed, that he would return. He did—in a few weeks with a company of soldiers at his back.

Striding to where the surveyors were sighting through

their glasses and waving their arms, the commandant of the fort did a bit of paper flaunting on his own account.

"I have here," he proclaimed in triumph, "an order from Washington instructing me to eject you from this military reservation." There came a significant rattle of rifles and the officer observed: "You see, I am prepared."

The representatives of the State of Michigan gazing into the gun barrels of the representatives of the United States did not hesitate. They gathered up their spades and pickaxes and tripods.

They did, however, continue their work away from the reservation and, meanwhile, sent news of the ouster to Governor Mason. The Michigan legislature, adopting resolutions against what its members called "an outrage," sent a protest to Washington and demanded reparations. Their plea for damages was laughed out of legislative halls.

In 1840 a bill asking for an appropriation of 100,000 acres of land to aid in building the canal was introduced from the Michigan legislature into Congress. The bill was defeated largely through the influence of Henry Clay who, during a satirical speech, declared:

"It is a work beyond the remotest settlement in the United States, if not in the moon."

Finding Congressional opposition too strong for one "remote settlement" to overcome, Michigan representatives, through the next three years, devoted their efforts to invoking the aid of the legislatures in New York, Pennsylvania, Ohio, Illinois and Wisconsin. In 1843 these five states made another appeal in Washington and lost. In 1844 they tried again and, again, lost. In 1848—a fifth time in 1849 and, finally, in 1852, an appeal which had

gathered strength in spite of its many defeats, passed through Congress.

A bill was authorized, on August 21, granting 750,000 acres of land to aid in building the Soo Canal.

The name of Charles T. Harvey, a salesman and not an engineer, will always be associated with the building of the first locks at Sault Ste Marie. Harvey, employed by E. & T. Fairbanks & Co., manufacturers of scales in Johnsbury, Vt., was staying at the Baptist mission in the Soo after a severe illness from typhoid fever when word reached the community of the land grant by Congress.

Imagination intrigued, Harvey spent the summer investigating mining lands along the southern shores of Lake Superior. He saw iron being smelted in Marquette county and he visited the copper districts. He had nothing more than a layman's knowledge of mineral values but he became convinced that wealth was waiting for those who acted quickly.

Returning to Sault Ste Marie in October he wrote to his employers telling them that the building of the canal was certain to render available all of the mineral wealth of the territory and that lands of great value could be selected as part of a national subsidy for the building of the canal. He urged their consent in promoting the enterprise, so far as the state legislature was concerned.

In reply they instructed him to go to Cincinnati and open a sales agency for scales but, in an added paragraph, or two, gave him permission to return to Michigan after concluding the more immediate task. However, the company was really interested in Harvey's proposal, as indicated by a sentence in the letter which expressed its willingness to pay the expense of sending out a surveying party.

It was getting late in the year and Harvey, concluding his Cincinnati task, hired L. L. Nichols, one of the engineers of the Erie canal, and rushed back to Sault Ste Marie, arriving there late in November. While Nichols surveyed for a canal site the young salesman explored the St. Mary's river in search of suitable stone for the locks. He located what he wanted on Drummond's Island and with all possible details written into a report left the Soo on the last boat of the season.

When the Michigan legislature convened the first week in January Harvey was present and, as he had hoped, was the only person there who really was familiar with the probable canal site and who could talk intelligently upon its advantages. He opposed the survey made in 1839, in which plans for locks 100 feet long had been recommended, and when the committee in charge of the project went into session it was natural that Harvey be summoned. In fact, the committee, which was composed mostly of farmers, insisted on his presence. It did more than listen to him—it requested him to draft a suitable bill.

In the meantime the salesman had established confidential relations with James F. Joy, counsel for the Michigan Central Railroad, and with John W. Brooks, the railroad's managing director. Between them, the three men drafted a measure which called for a minimum lockage of 350 by 75 feet.

A protesting clamor resounded from one end of the state to the other. It was a clamor that was led by Captain E. B. Ward, the largest owner of steamships on the lakes. Captain Ward, convinced of Harvey's madness, flooded the mails with letters to newspaper editors, legislators,

and other influential citizens. His most widely-published letter follows:

"Detroit, Jan. 29, 1853.

"Hon. William A. Burt,
Member, H. of R.,
Lansing, Mich.

"Dear Sir: The deep anxiety I feel in common with the rest of the community for the early completion of the Sault Ste Marie canal, induces me to write to you on the subject. I fear the defeat of our long-cherished hope. The legislature in their anxiety to prevent undue speculation by those who would be disposed to contract to do the work are in great danger of going to the opposite extreme, and make such requirements as will deter competent men from taking the contract for the land. The size proposed by the senate bill, 350 feet by 75 feet locks, is entirely too large for the locks. The crooked, narrow, shallow and rocky channels in the St. Mary's river will forever deter the largest class of steamers from navigating these waters. Aside from the impediments in the two Lakes George there are several places where the channel is very narrow, with but eleven feet of water clear of rocks and the channels too crooked for the large class of steamers to pass in safety. This I regard as a conclusive argument against making the locks so large as is contemplated.

"I do not believe there is the least necessity for making the locks over 260 feet in the clear and 60 feet wide, as no vessels of larger dimensions than could pass such locks can be used there with safety without an expenditure of a very large sum of money in excavating rock at various points along the river, a work that is not likely to be

undertaken during the present century. The value of wild lands may be estimated by ascertaining the amount actually realized by the state for the large grants that have heretofore been made for purposes of improvement when no taxes were collected until the lands were sold to settlers, I think it will be difficult to find a value of 25 cents per acre for all such grants made to this state.

"A well-organized company might make the lands worth 75 cents per acre provided they were not taxed while held by the company. I have no doubt that the small-sized canal required by the act making the grant of land would cost $525,000, or 70 cents per acre. Add eight cents per acre for interest during the construction of the work and fifteen cents per acre for selection and location brings it to ninety-three cents per acre, a price at which any quantity can now be located without any risk of loss and with much greater chances of making desirable selections.

"If the legislature will appoint a committee who shall act with the governor to make the best contract for this state they can, holding them responsible for a faithful discharge of their duties, I feel confident we shall succeed in securing the great object of our wishes. But if the bill should materially restrict the governor in his powers I think we have good reason to fear that the most vital interests of the state will be delayed for years to come.

"Hoping for a favorable issue to this absorbing question, I remain

"Truly yours

"E. B. Ward."

Captain Ward's letter caused an immediate joint session of the two houses of state legislation and Harvey was

interrogated as to his reasons for proposing the larger canal. Ward, a shipowner and one of the wealthiest citizens of Michigan, apparently had the advantage in experience but he soon lost that advantage in the rattle of answers given by the salesman who was so familiar with his subject and who had a vision of a vast wilderness changing into an empire of cities and towns and villages —all because of iron and copper.

When told of the passing of the measure the Fairbanks company invited New York and New England capitalists to join in making the necessary bid. The names attached to the contract which the state approved were: Joseph P. Fairbanks, J. W. Brooks, August Belmont, Erastus Corning, H. Dwight, jr., and Thomas Dwyer.

Harvey then visited the governor of Michigan and secured an appointment as a special agent of the state to select the lands donated within the borders of the state. Making his choice, he went to Washington where his selections were confirmed by the United States Commissioner of Lands.

"The knowledge upon which I acted," he afterwards wrote, "was gained while touring among the mines the previous summer, and the 140,000 acres, more or less, which I secured for my principals realized millions upon millions of dollars in later years.

"It will be enough to say that among them was the location afterwards developed into the Calumet & Hecla copper mine."

His next move was to go to Albany, N. Y., where he secured a charter for the St. Mary's Ship Canal Company and the concern was incorporated with these officers and directors:

President, Erastus Corning, Albany, N. Y.; Vice Presi-

dent, John W. Brooks, Detroit, Mich.; directors, Erastus Fairbanks, Johnsbury, Vt.; John M. Forbes, Boston, Mass.; John F. Seymour, Utica, N. Y.; Benjamin Tibbits, Albany, N. Y.; Charles T. Harvey, Sault Ste Marie, Mich., general agent.

Fifty thousand dollars formed the sum placed to Harvey's credit in Detroit. They were ready to go to work.

Chapter Seven

A SALESMAN OF SCALES BUILDS A CANAL

ON JUNE 4, 1853, Charles T. Harvey began operations on the canal by spading out a wheelbarrow full of dirt.

Through the days and weeks and months that followed sickness and strife hammered away at them just as they, in turn, hammered away at the slowly-yielding rock ledge in the river's bottom. Malaria, typhoid, cholera swept in; men died and men came to take their places, to die, too. Throughout the country strikes were prevalent and agents came to the Soo to take away labor. But the work went on.

Immigrant ships, coming up the harbor in New York, were boarded by company foremen and their steerage passengers signed into gangs, and with passage paid, were loaded into trains and without seeing New York, of which they had heard, were carried overland to Sault Ste Marie, of which they had never heard. Nor, were all the difficulties confined to the blasting and digging.

Colonel Augustus Canfield, of the United States Corps of Topographical Engineers, assigned to inspect and approve the work, clashed with Harvey over an excavating problem and the workmen, knowing who was in charge of the payroll, refused to obey the officer's instructions. Furious over their action, Canfield wrote the directors of the company advising them that "their young, inexperienced superintendent should not interfere in engineering affairs in which he was a novice," but Har-

vey, rapidly becoming a practical, if not a theoretical, engineer, had beaten Canfield to the post.

Quietly he had made accurate comparisons between his own method and the one recommended by Canfield and had written his superiors showing them nearly double the work at approximately the same cost. The company executives replied to Canfield's complaint by sending an experienced engineer to investigate the undertaking and with that visit the army officer took a protracted vacation but, with the consent of the visiting engineer, retained exclusive charge of preparing the lock chamber doors.

It should be explained that Colonel Canfield was a martinet on military etiquette and in his dislike for Harvey relied on precedent in engineering affairs instead of using his knowledge to solve an unusual situation. For, there were many unusual situations in connection with the building of the canal.

"Before it was completed," wrote Harvey, "the colonel died in Detroit, but his assistants continued the work of building a coffer dam. Special material was hauled from long distances and no expense was spared to perfect his plan. Work on the canal progressed until use of the plan became necessary. Then the dam was tested but failed to stand the ultimate pressure and collapsed. It was repaired under direction of Major Glenn, the colonel's first assistant, but again on trial it collapsed. For the third time the same result occurred and a fearful disaster in having Lake Superior pour through the unfinished canal was narrowly averted.

"The situation was becoming critical by delay of the work late in the season. The directors became alarmed and the president called on them to meet him at the Soo. A conference with the government engineers was held when

Sail and Steam—the *Australasia*, Built by James Davidson, and the Largest Ship on the Lakes in the Middle 'Eighties, with a Carrying Capacity of 2,202 Tons

the latter said that in pursuance of the previous agreement they had been in exclusive charge of the dam but were ready to confess it was beyond their ability to make it equal to the trial tests, the difficulty being that the water under pressure forced channels under the uneven base and lifted the frame.

"They had heard that I had declared I could solve the problem but had declined to act while it was in their control; they, therefore, requested the board to induce me to assume charge and they would hope for my success. The board immediately acted upon the suggestion and I was asked how long it would take to make it ready.

" 'A week,' I answered.

" 'How much will it cost?'

" 'A few hundred dollars.'

"They glared at me in astonishment because the government agents had spent months, and upwards of $50,000, in building the coffer dam. But they told me to go ahead and stood by to watch.

"I caused the frame of the dam to be rebuilt and refilled as before. Then, having bought the spare mainsails of several large vessels unloading stone for the locks, I had them nailed to the top of the dam and their breadth carried upstream and weighted down in place by a few scows of gravel.

"Within three days full pressure was applied. The coffer dam remained firm and tight as a bottle."

Harvey was then placed in complete charge of the work and in checking the details of Canfield's survey he discovered two serious errors. Canfield, when establishing the 12-foot depth of the channel had made his measurements when the waters of Superior were a foot higher than normal. This meant, when opened, the canal would

have a clearance of but 11 feet. Harvey set his men to the slow, tedious job of chiseling away the rock.

The second mistake was more serious. It was discovered that a reef beyond the coffer dam at the pier entrance to Lake Superior was solid rock—and not sand, as indicated on the government chart. The ledge was from one inch to three feet in thickness and contained 3,300 square yards. This mistake was not discovered until after navigation had closed for the season of 1854 and the contract called for the finishing of the canal on May 19, the following spring.

Harvey immediately sent a letter to the president of his company and because of the close of navigation weeks were required before the message was delivered. The directors, hastily summoned, decided to make a request to the Michigan legislature for an extension of time but before the legislature convened the difficulties became generally known and political influences were set at work. It soon became apparent that an extension would not be granted.

In this situation W. J. McAlpine and John T. Clark, state engineers of New York, were called into consultation and it was their decision that a new coffer dam would be necessary. Harvey, waiting at the Soo, evolved another plan and wrote to the company. He had been so successful that permission was granted and he was told that $30,000 had been voted for the experiment of removing the ledge—and if he was unsuccessful no censure would result.

Harvey wrote the story:

"After weeks of study on the problem I decided, in January, to build a 'steam punch.' No machine shop ex-

isted within 400 miles of the location and only a snow shoe trail led away from it. The machine must be made there in an ordinary carpenter or blacksmith shop. To make the desired forging a bar of four-inch square steel was tapered to a tempered point one inch square; then rings were made of increasing sizes and welded around the bar and fused together until a solid mass was shaped two feet, or more, long, swelling from an inch-square point to sixteen inches in diameter at the upper end.

"A large freight steamer happened to be at the river dock for winter quarters. The stern of the steamer was raised out of water and two of the wrought iron blades of its propeller wheel were removed. One was welded to the butt-end of the sixteen-inch diameter punch, forming a 'thimble flange' to it. The other blade was used to make a thimble which fitted inside the other and into this the end of a stick of white oak timber, about thirty feet long and fourteen inches square, was fitted. Key holes were cut and a heavy wedge key inserted which passed through both thimbles and held the massive metal punch firmly attached to the timber shaft. To give more gravity to the same, tram car axles were bolted in grooves cut on its four sides until the aggregate weight of the punch equaled three tons.

"The shaft was then fitted with guides into the frame of a tall spile driver on a scow and connected by rope and pulley with the drum of a portable steam engine, suitably placed on the snow, and the 'drop' was fixed at fifteen feet, including the required water channel depth of twelve feet. A gauge was marked on the timber shaft and to sink the same to the water level the punch must go a foot below the required bottom level.

"Reels were placed in the scow working ropes whose ends were attached to the opposite pier—a turn on the reels moved the scow eighteen inches sideways so that in that space the solid punch must sink to nearly its own diameter in the rock to bring the mark on the shaft of the water level.

"But the time for the trial of the machine did not arrive without mishaps. The first was peculiar. I was a strict Sabbatarian and no unnecessary Sunday work was allowed or pay authorized therefor. When my plans for the punch were made manifest the skilled workmen, knowing its importance, took great interest in its being perfected and expedited. They decided that its great prospective utility warranted Sunday labor and they concluded to club together and work upon the punch forging the next Sunday without pay and surprise me by completing it earlier than expected.

"After working all day and late into the night they adjourned to the regular morning hour but by some unknown means the shop caught fire. A more penitent set of men would have been difficult to find. The most serious loss was that all large bellows in the works had been destroyed. To get a suitable fire to manipulate the forging all the bellows had been placed on a battery to produce a sufficient blast. They had to be duplicated if the plan were not to be abandoned.

"A team and driver were selected and the cashier was sent out to buy large bellows wherever they could be found. As the nearest settlements likely to have them were at the saw mills scattered along the Canadian shore of Georgian Bay it was there the cashier went and after traveling hundreds of miles over ice and snow he re-

turned with six or eight bellows of suitable size. The work was continued. The punch was completed.

"It was rigged into place but on the first drop the side of a boulder in the channel was struck a glancing blow. The timber shaft was broken off at the socket. The punch was in the bottom of the river. Boulders were then grappled for and the few found were removed. Also, we recovered the punch. Once again we put the punch on a timber and once more started the work.

"Three scows, working eight hours each, kept the punch operating without cessation, day and night, excepting Sundays, for weeks. The punch gradually advanced from the thin edge at the lake entrance to the thicker portion near the coffer dam. Meanwhile the canal prism had been finished and on April 19 I opened the dam sluice gates and let Lake Superior flow in—then I ordered the men to get behind the punch and test its results.

"Several times the scoop from the scow came up empty and sitting there on the edge of the pier . . . well, my heart first stood still and then sank. I ordered the operator of the scoop to draw to the utmost limit and put on extra holding power.

"The old dredge creaked and twisted as though it would go to pieces but when the scoop came up it was filled to the brim with broken stone!

"The problem was solved.

"After the dredge had broken a 'face' across the channel the work was as easy as if the ledge were sand. Not a piece of rock came up as large as a man's hand. The punch had pulverized the ledge quite below the required limit. By the tenth of May the channel was complete excepting for some trimming along its edges."

Spring rains had set in, preventing Harvey's letters from reaching their destination and the directors of the company, accompanied by engineers, set out from Albany for the crossroads of the Lakes. With the certainty that the Michigan legislature would not give an extension in time, the company was preparing its legal batteries for a long and desperate struggle to win the land entries that had been chosen. Unless those properties were won, the company stood to lose all, and it would be a staggering loss. Already the market value of its stock had fallen to less than half the par value.

Reaching Detroit, the directors took the first steamer of the season to Sault Ste Marie, arriving there May 10, little more than a week before the expiration of the time limit. They formed a solemn group as they stood on deck with the steamer slowly warping into the dock where Harvey was waiting.

President Corning was first off the ship and as he grasped an outstretched hand he cried:

"Tell us the worst."

Grinning, Harvey answered: "Only the finishing touches are needed and the canal will be ready."

"You should not joke about so serious a matter," reproved Corning.

"I am not joking."

Corning was incredulous, as were the others, and asked:

"What about the rock ledge?"

"Come and see."

Carriages were summoned and all rode along the canal to the Lake Superior entrance. They stood together for a few minutes, in speechless amazement, when Vice President Brooks turned to Harvey and exclaimed:

"There is not an engineer in the world but who would be proud to point to an achievement such as this."

McAlpine and Clark, the New York state engineers who had accompanied the party, cried together: "We join in that opinion."

A few hours later a message was sent to the Governor of Michigan inviting him to come to Sault Ste Marie for an inspection and an acceptance of the work. On May 21, that inspection was finished, and control of the canal passed into the custody of the State of Michigan and, in later years, to the care of the United States.

Harvey, a salesman of scales, had finished a job that, some forty years afterwards, caused General O. M. Poe, builder of another lock at Sault Ste Marie, to write:

"The canal was a remarkable work for its time and purpose. The construction of the locks bore evidence of a master's hand in their design and execution. These locks are now being torn out to make room for a new one, and every step in their construction reveals the excellence of the workmanship, the honest character of the materials employed, and the faithful compliance with the conditions of the contract under which they were built, not merely in its letter but in its spirit.

"I must confess to a feeling of great regret that it has become necessary to destroy these first locks. Inanimate though they were, they seemed to appeal to every sentiment of respect. They had never failed to respond to any demand within their capacity; that had contributed, in a higher degree than any other one factor, to the development of the country westward of them, and having done such good work are now to be obliterated in the interest of that very commerce they did so much to establish.

"The man who, knowing their history, can see them go, without compunction, is made of other stuff than I am, and, if an engineer, has no genuine love for his profession nor pride in the achievement of those who successful apply its teachings then he is not the best example to his art."

The actual cost of building the canal was slightly under $1,000,000 and the first vessel up through the locks was the steamer *Illinois*; the first vessel down was the steamer *Baltimore.* Waiting were the *North Star, Northerner, Lady Elgin, Superior*, and the propellers *Gen. Taylor, Mineral Rock, Northern Light, City of Superior,* and *Lac La Belle.*

Ships and men and commerce came to Superior. Within five or six years the canal, which such an experienced vesselman as Captain E. B. Ward had said was too large, was becoming too small. Not that it was inadequate for the shipping in and out of Lake Superior but already, in 1860, there were increasing numbers of occasions when ships had to stand in line, awaiting turns. There were those who were beginning to say:

"Within another few years this great work will have to be duplicated. They will be looking for Charlie Harvey again."

In June Captain J. H. Andrews took the brig *Freeman* through the lock, being the first sailing vessel bound up, to make the passage. Returning to Cleveland he found a schooner he had formerly sailed, loaded with powder and barrels for Ontonagon, but in a disabled condition.

He was approached by H. N. Gates, owner of the ship, with a proposition:

"Captain, if you will take the *Seeman* to Ontonagon I

will accept the risk on the vessel and the owners of the cargo will do likewise with their property."

After getting the *Seeman* in sailing condition Andrews lifted anchors. "With the thermometer showing twelve degrees below zero and the ship loaded with ice, we reached Ontonagon December 7," he later reported. "In the village supplies were very low. Flour was selling for fifteen dollars a barrel and very little was to be had. The townspeople tried to coax me into sailing to Copper Harbor but I told them I would not think of going into the lake in a sailing vessel at that time in the year.

"They offered to buy the ship. I made a price. They accepted and put a Captain Beaser in command. Within twelve hours after I sold the boat she was on the rocks near Copper Harbor. I remained in Ontonagon until January 14 when, with the crew, I started back, on snowshoes for Cleveland.

"For thirty days we floundered through the snow and on the thirtieth day when all my party had set down to die, as we had had nothing to eat excepting a raw hedgehog through the last three days, I kept going out of sheer desperation. Suddenly I came to a waterhole in the ice on a creek and following a path found a shanty occupied by some loggers.

"By kicking and cursing I managed to get the men to move. After recuperating we secured a conveyance to take us to Madison, Wis. I had more than twelve thousand dollars in my pockets but it might just have been so much chaff so far as buying anything was concerned. The loggers would not listen to pay.

"On the way back to Cleveland the train stopped at Oberlin, O., and chancing to look out of the window I saw Mr. Gates. I yelled at him and with a quaver in his voice he answered:

" 'Is it you, Captain?'

" 'Certainly.'

" 'I thought you were dead.' He came into the car and took hold of my arm. 'Now I see you are not dead. Where is my schooner *Seeman?*'

" 'I do not know precisely but the last time I saw her was on the eleventh of December going winged out for Copper Harbor.'

" 'It is a very singular thing to take charge of a man's vessel and not know where she is,' he growled.

"I then told him what I had got for the vessel, as well as the freight, and that the crew was all alive.

" 'If that is so I am satisfied,' he said, doubtfully.

"I gave him the money."

The record of tonnage through the lock in 1855 was:

1855: steamers, 149, other registered craft, 44; net registered tonnage, 106,296; passengers, 8,295; coal, 1,414 tons; flour, 10,289 barrels; manufactured and pig iron, 1,445 tons; salt, 29 tons; copper, 3,196 tons; iron ore, 1,447 tons; lumber 127,000 feet; general merchandise, 5,690 tons—total freight, 14,503 tons.

In 1860 it had grown to: Steamers, 337, other registered craft, 579; net registered tonnage, 403,657; passengers (no record kept); coal (no record kept); flour, 50,250 barrels; wheat, none; grain, 133,437 bushels; manufactured and pig iron, 1,446 tons; salt, none; copper, 9,000 tons; iron ore, 120,000 tons; lumber, no record; general merchandise, 14,915 tons—total freight, 153,721 tons.

Iron and copper, salt and lumber, flour and grain, coal and merchandise were being transported in increasing cargoes—people were coming. Another of the stories of these familiar waters—the story of iron—was beginning to be written.

Chapter Eight

WORK IS SUSPENDED FOR TWO DAYS WHILE THE MAIL IS READ

Flags were flying. A band was playing. Men, in their Sunday clothes, were cheering. Women, gesticulating and excited, were making their way down the village street while ahead children were running. All were going in one direction; already, at the dock of the Cleveland Iron Mining Company, there waited a group of young women, dressed in white and carrying flowers—Marquette, on the banks of the Carp river, a little way inland from Lake Superior, was celebrating.

Downstream, her nose pointed towards the spot where all were now assembled, the steamer *Manhattan* was slowly working her way to port. A long blast from her whistle brought an answering roar of voices. Every eye watched as the vessel sidled in and when lines were thrown there were a thousand up-stretched hands eager to grasp them and loop them about the stanchions.

It was the first steamer to put into the mining community and Captain Caldwell, weather-beaten, bald-headed and blunt of speech, was summoned from his post on the bridge to be showered with flowers and cries of welcome. Resolutions were read by Dr. Livermore, a leading citizen, and the young women dressed in white brought the formalities to a close by presenting the Stars and Stripes to the now befuddled skipper.

The resolutions have been preserved and two of their

twelve paragraphs will show something of the spirit of Marquette on that day of celebration in 1851:

"Resolved, that in our opinion Marquette will become a place of business and resort sufficient to warrant its being made a stopping place by all boats on their upward as well as their downward trips, and that the time is not far distant when the commercial business, growing out of these rich and inexhaustible mountains of iron, will alone require more shipping than at this time floats upon this lake.

"Resolved, that in our estimation those iron companies who have been pioneers in operation here, and who have had incredible and unforeseen difficulties, disappointments and misfortunes to grapple with, are deserving of a favoring and fostering consideration, and it is a source of much gratification that the smoke of their fires and clink of their hammers give indications that days and years of prosperity are in store for them."

Joining in the festivities was a man who looked much older than his twenty-one years. His name was Peter White and he was the same Peter White who had shouldered his pack and proudly declared when another had offered to help him: "I will carry my own load, sir." In a bleak country he had been bred out of a hardy race. His shoulders had broadened and thickened; his arms, once dangling and lean, had become muscular; his spindling legs of youth had hardened until they were as strong as young oak saplings. A heavy brush of black whiskers covered his chin and lips but his humorous, black eyes belied the ferocity of his beard.

There was more than youthful enthusiasm in Peter's

eyes as he watched passengers and cargo coming off the *Manhattan.* Although but twenty-one he had witnessed the first rush of prospectors and now as storekeeper for the Marquette Mining Company he was becoming an important figure in the village. Sitting on the sugar and flour barrels, of nights, men had talked of ships, of a canal at Sault Ste Marie, and of a railroad in this Northern Peninsula.

The first ship was now a realization—already there were hopeful signs that a canal would soon be under way—gossip was that outside capital was becoming interested in furnishing the railroad. And, less than two months after the appearance of the *Manhattan,* Heman B. Ely was in Marquette negotiating for the railroad. On November 1, 1851, Ely made an agreement under which he was to build from Marquette to the mines and in return was to receive the carrying loads of the mining companies.

During the first two years the road was to get $1 a ton for all ore transported and 50 cents a ton thereafter until such time as an annual total of 70,000 tons was reached. Afterwards, a graduating rate to a minimum of 30 cents a ton would apply when the annual output was 130,000 tons. Ely purposed calling his line the Green Bay and Superior Railroad Company, indicating he had aspirations beyond the mining properties.

Efforts to interest capital were unsuccessful—so unsuccessful that, in 1852, Ely was compelled to sell off part of his own provisions that he might get sufficient money to leave Marquette. He took his railroad plan with him and Tower Jackson, agent for the Cleveland Iron Mining Company, was so disgusted that he proposed a plank road to and from the mines, and argued:

"A plank road—not a railroad—is what we need. A plank road will benefit the farmers and stimulate the ore shipments from the mine through twelve months in the year while a railroad would only fill the pockets of eastern capitalists and bring ruin to the iron country."

While Jackson was winning converts—and he was not having much trouble because of the general antipathy towards Ely—Peter White was writing the bill of lading for the first shipment of iron ore from the Superior country. The shipment consisted of six barrels and was consigned to B. L. Webb, of Detroit, by the Marquette Iron Company. The steamer *Baltimore* carried the barrels to Sault Ste Marie where they were portaged around the rapids and from there sent on to their destination. The date was July 7, 1852.

In May, 1853, W. A. Fisher, the eastern capitalist who had financed R. J. Graveraet in the promotion of the Marquette Mining Company, became discouraged over the failure to make a profit and sold out to the Cleveland company. By the purchase the Cleveland organization added the name of Peter White to its payroll, and some four months later White aided in sending the first quantity shipment of ore to the blast furnaces in the region of the lower lakes. This was in September when five boats were loaded with 152 tons of ore and after being portaged at the Soo the ore was routed to Erie, Pa., and from there to Sharon, Pa.

The first boatload was delivered to the furnaces owned by David and J. F. Agnew. David Agnew described the event in these words:

"The ore was used in the furnace partly alone and partly in mixture with native ores and the experiment was

highly successful, the furnace working well and producing an increased yield of metal which was taken to the Sharon Iron Works and there converted into bar iron and nails of very superior quality."

The Cleveland Iron Mining Company also received a letter from General J. P. Curtis, President of the Sharon Iron Company:

"As you are anxious to hear the result of our test of Lake Superior ore in a blast furnace, I hasten to give it to you. It was fully successful, more than we asked for. We worked the furnace for several days on Lake Superior ore entire, no mixture whatever with it, and yielded fully 80 percent of metal per ton. We have not tried the metal but it looks very well and there is no doubt of its quality. This settles the question as to the matter of converting the ore and calls for a road at once. There are furnaces now built on the canals, on the Cleveland and Erie, to use all the ore that we can mine the first year and there should be no delay in pushing the road and dock."

General Curtis was taking cognizance of the sharp controversy which existed between furnace men over the merits of Superior ore. Some maintained it could not be melted with raw coal; that the ore would have to be roasted and the coal made into coke before using. Gradually, with use, dissenting opinions disappeared.

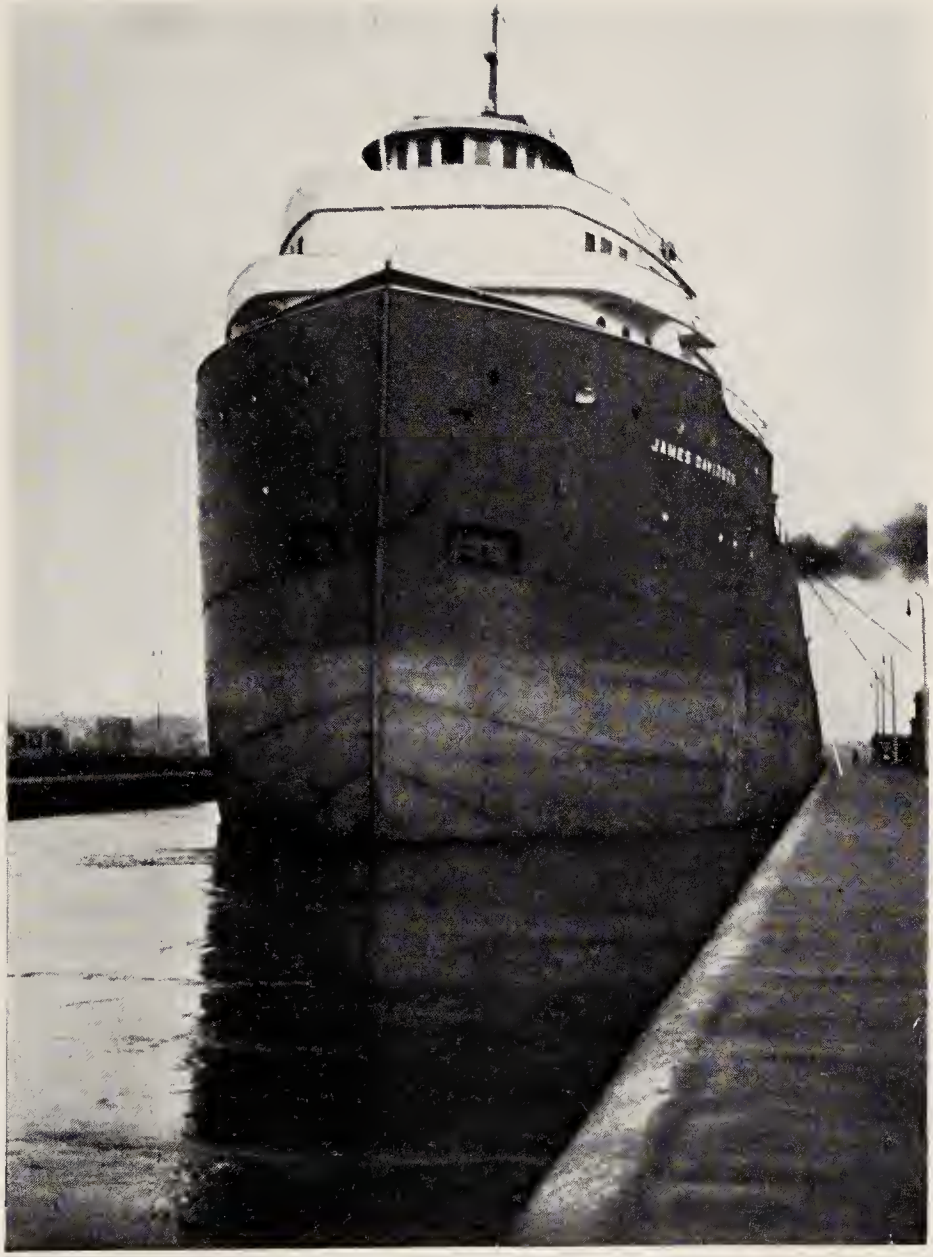
The success of the ore in Sharon furnaces attracted immediate attention and the plank road, hewn from native timber, was converted into a strap railroad so more quantities of ore could be brought down from the mines to Mar-

quette. Families began crowding in and Peter White, alive to opportunity, resigned his job and opened a store of his own. The first snow flurry came in October and in that same month the last boat of the season left from the Cleveland dock.

With that last boat mails stopped and Marquette looked with uneasiness on the coming of winter. By November ice and snow formed a barrier to the outside world. By December the ice in the Carp river was two feet thick and, away from the village, only the cracking of trees in the raw winds or the patient plodding of an Indian on snowshoes broke the solitude of the North. Christmas came. Church bells rang but there were no messages of cheer for anyone, excepting those they exchanged among themselves.

To those such as Peter White who were accustomed to these long silences winter was a time of endurance but even Peter and those like him were becoming sympathetic with the restlessness of the newcomers to the community. Finally, all could stand it no longer. A mass meeting was held on January 8, 1854. Speeches were made. Prayers were said. And all had similar endings—Peter White was to go for the mails.

For a day Marquette suspended work and wrote letters and the following morning White, accompanied by six Indians and three dog teams, was carrying one thousand letters away from Marquette and to the post office at Green Bay, Wis. On the seventh day and while they were following the Cedar river, a few miles from Green Bay, they crossed the path of a "mail train" in charge of Daniel M. Whitney. There were five sleigh loads, weighing nearly eight tons, and Whitney was headed towards Marquette and Escanaba.



The *James Davidson* of the Tomlinson Fleet, Being Locked Through the Canal at Sault Ste. Marie

Photograph by Margaret Bourke White
Permission of Fortune *magazine*

"How is that?" curiously asked White. "Marquette is not expecting mail from you."

Whitney explained that the post office at Green Bay was already overloaded and the postmaster, in need of space, had assumed the responsibility of "employing me for a single trip."

Exchanging one of the sleigh loads for the letters in his sleds, White sent his own Indians, as well as the party of ten men who had come along to help Whitney, back to Marquette while he and Whitney went to Green Bay. The mail reached Marquette January 21. For two days no work was done in the community—everyone read letters and newspapers, his own and his neighbors'.

In Green Bay Peter White found there was an accumulation of twenty-four bags of mail awaiting distribution to Superior ports and other mail was arriving at the post office at the rate of six bushel basketsful a day.

"What are you going to do?" he asked.

"What can I do?" cried the harassed postmaster. "I exceeded my authority when I sent Whitney. I had to do it. I had no more room here and I could not leave government mail bags in the street."

"I'll do something about it," promised White, in sudden decision. "Where is the nearest telegraph station?"

"At Fond du Lac."

To Fond du Lac went White. He composed a telegram to Senator Lewis Cass. In that telegram he reminded Cass of the importance of the iron and copper deposits and ended with the surprising news that the Northern Peninsula of Michigan was on the verge of insurrection unless an apathetic Post Office Department awakened to its responsibilities.

Alarmed over the wording of the message Cass hur-

riedly turned over the telegram to the Postmaster General and notified White to await the receipt of a letter addressed to him at Green Bay. Three days later came a communication from the office of the Postmaster General containing the information that Henry Hart, a special agent of the Post Office Department, was coming from Adrian, Mich., to see what could be done.

No sooner had Peter received this letter than another message—a trifle more beguiling—was handed him. Its sender and its deliverer was the telegraph operator of Fond du Lac. It was a bill for $66, the cost of his bombardment of words on Senator Cass. Peter was fairly numb with fright. He stuttered and stammered his arguments but the operator was obdurate.

"I want my money," he insisted.

"I'll give you six dollars," bargained White.

"You'll give me sixty-six dollars."

Peter finally did and his thrifty soul found scant pleasure in the knowledge that the citizens of Marquette would reimburse him.

With the debt paid White was fired into a desire to do something more than Marquette was expecting. While waiting for the special agent he noticed there were a lot of empty mail bags about the post office. His fertile mind concocted a plot and with the idea complete he took the postmaster into his confidence.

Late in the following afternoon when Agent Hart arrived at Green Bay, Peter was at the station to meet him. Instead of taking him to the post office White became host at the town's leading hotel where a supper of champagne and oysters was served. Cigars and coffee finished off the elaborate meal and not until then did Peter mention the reason for Hart's presence in the town.

"I'll let your own eyes see the story," he promised, and accompanied the representative of the Post Office Department to the little frame building where a crudely-lettered sign hung over the door. Going inside the agent saw ——

Sack after sack after sack of mail, each sack carefully closed, tagged, and piled, end on end, tier after tier, reaching almost to the ceiling and overflowing from the back room of the post office and out into the woodshed.

Hart gasped. Carrying an oil lamp in his left hand he carefully examined the tags, felt the contents and glanced at the addresses on letters that, even though tightly held by a draw string, were crowding out of the sacks.

"How many bags are there?" he cried.

"Count them," smiled Peter.

"One—two—three—four . . . eighty-five—eighty-six—eighty-seven . . . one hundred and three . . . one hundred and eighteen—one hundred and nineteen—one hundred and twenty." The agent straightened up, set the oil lamp on the floor, and rubbed the stiffness out of his neck and back.

"I don't blame you for sending that telegram to Senator Cass," he grinned. "I'll do something about this right now." Turning to the postmaster he ordered: "Put Whitney on a regular mail route between here and Superior ports. Have him make regular weekly trips."

The postmaster nudged White but Peter answered with a mysterious shake of his head.

Taking Hart by the arm he led him out of the post office and back to the hotel. For a week he shadowed the agent, entertained him, diverted him with elaborate and appetizing meals, kept him in good humor with amusing stories of his own experiences, as well as the experiences

of others, and never lost an opportunity to stress the importance of the mining operations. When Hart left he was feeling very, very kindly towards Peter White and those he represented.

On the way to the railroad station he stopped in at the post office and gave the postmaster a written authorization to make three trips each week to Marquette and Escanaba.

Peter White returned from the station to help his confederate in again sorting the Marquette and Escanaba mail. The sacks which had been so neatly and impressively piled, tier on tier, were pulled down, and dumped on the floor in the back room. Non-essentials which had loaded the bottoms were cast aside and this time the bags were filled with nothing but letters and newspapers and packages.

The accumulation of "one hundred and twenty sacks of mail" shrunk to one-third that number.

But, thereafter, for years, the mails were delivered, three times a week, to the iron country.

In Cleveland W. J. Gordon heard of the exploit and when spring came he went to Marquette to look over the Cleveland Iron Mining Company, in which he was a stockholder, and, also, to meet Peter White. Always on the search for capable young men Gordon lost no time in making up his mind as to White but he was puzzled over just what to offer. For months the older man debated and in 1855 he suggested that Peter take over the management of the real estate interests of the company in and around Marquette. White accepted and much of the land on which Marquette is now located was sold by him.

In that same year of 1855 the canal at Sault Ste Marie was opened and the first shipment of iron ore to pass

through the locks was carried by the brig *Columbia*, commanded by Captain Judson Wells. The date was August 17 and the ore was sent to Cleveland. In that year the Cleveland company shipped all the iron ore carried on the Lakes—there were 1,447 tons. It was all carried in sailing vessels and the method of loading and unloading was by hand. The crews of the vessels did the work and each member was paid 25 cents an hour, extra. Four days were required to load the customary cargo of 300 tons and a week was spent in unloading.

Sailing masters did not like to carry the heavy mineral in the holds of their ships and whenever possible it was piled on deck. If, however, the size of the cargo necessitated filling the hold the unloading became difficult and costly. A staging had to be built in the hold and the ore shoveled, by hand, on to the temporary platform and from there, also by hand, to the deck from where men, with wheelbarrows, carted it ashore.

There was another method that called for the slinging of a tub from the ship's rigging and by means of a block and tackle, operated by a horse, the tub, after being filled, was lifted out of the hold and emptied into wheelbarrows where, once more, men lugged the mineral to shore.

It was hard, tedious work but, at the time, there was no other way. It was a job that had to be done and a few men developed into importance in the doing.

In Marquette Peter White was developing in the affairs of the mining company. He saw, as did others, that the strap railroad had lost its usefulness even before it was opened in 1855. Inquiries and orders for ore were coming faster than they could be filled and in 1856 when Congress passed a land grant to stimulate the building of

railroads in the peninsula White began negotiating with Heman B. Ely. In spite of Ely's first failure, White had not lost confidence in him but while they were in the midst of negotiations, Ely died and the work was carried on by a brother, Samuel P. Ely.

Inasmuch as the next state legislature was to take up the work of disposing of the land grants it was important that the Marquette district be represented by some one familiar with the territory. There was an obvious choice and after the election Peter White walked on snowshoes from Marquette to Escanaba, took a stagecoach from there to Fond du Lac and resumed walking until he reached Lansing, a distance of some 350 miles. He covered the distance in fifteen days.

White soon observed that his stories were as diverting to these legislators as they had been to Hart, the agent for the Post Office Department, and he lost no time in building himself into popularity. As usual, he had a fixed purpose. When the matter of land grants came before the House he was on his feet. He pleaded with the lawmakers to pay no heed to those who had little knowledge of the needs of the iron and copper countries and ended his entreaty by declaring these uninformed persons "are as thick as autumnal leaves which strew the brooks in Vallambrosia."

The fact that few knew the derivation of his simile, or what it meant, gave him a weapon. In fact, a two-edged weapon—one side a keenness for oratory, the other side a sharpness of intellectuality, or, perhaps, learnedness. He did not tell anyone that, just prior to leaving Marquette, he had sought out a friend for just such a quotation and that on the way to Lansing he had memorized it so it would roll sonorously off his tongue.

That speech made him a power in state legislation and no land grants were made that did not carry his sanction. He saw to it that Samuel Ely, now engaged in building a steam railroad from Marquette to the mines, was properly compensated and he returned to Marquette in the late spring of 1857 to find Ely rushing the work. The railroad was finished in September.

A vision had come true. Steamboats were calling at Marquette; a canal was in operation at Sault Ste Marie; the whistles of locomotives were being heard in the hills.

And in that same year of 1857 another, whose name was to become inseparable from the transportation of ore on the Lakes, came to Marquette. It was Fayette Brown.

Chapter Nine

OTHER FORTUNES BEGIN TO GROW

Cottons and woolens, worsteds and tweeds, ribbons and threads—there was little attractiveness in these wares for Fayette Brown as he familiarized himself with changing price lists in a wholesale dry goods store in Pittsburgh.

But his brother, a partner in the firm, kept influencing him even though his imagination was being intrigued by the discoveries of iron in Michigan's Upper Peninsula.

"Stay here, some day you will be a member of the firm," counseled the older Brown and Fayette, guided by the advice, stayed to become, as his brother had predicted, a partner. But, with that accomplishment, his boundaries remained the same—on all sides, cottons and woolens, worsteds and tweeds, ribbons and threads.

He resigned.

Going to Cleveland he organized a banking firm with George Mygatt and before long the imagination which had been intrigued by discoveries in iron was wrapping itself about the intricacies of financing these same discoveries. He visited Marquette and examined the ore deposits but before he could make his arrangements to devote his time to the building of trade routes and their cargo carriers, war came and he was appointed a paymaster in the army. A few necessary years of that and then the opportunity for which he had been preparing ——

He became general agent and manager for the Jackson Iron Mining Company. At the age of forty-one he was actively starting a career that was to help—greatly help—in making Cleveland one of the important iron centers of the world.

About the Jackson properties a community was growing—it wanted a name. A council was held with the Ojibwa Indians and Negaunee was chosen; to the Ojibwas it meant "pioneer" and was entirely appropriate, inasmuch as the first furnace in the Superior country —the Pioneer—was established there.

A year later Samuel P. Ely was asked to give a name to the settlement about the Cleveland operations and he appealed to Peter White.

"The ridge of land upon which the Cleveland mine is located is the highest ground between Lakes Superior and Michigan," observed White, after a long discussion. "In Ojibwa the word for this character of land is Ishpeming."

"Let's call it that," suggested Ely.

"In an abstract sense it also means Heaven," ruminated White.

"All the better."

And, so, they called it Ishpeming.

A year later White, nor Ely, nor any of the other pioneers in the iron country, was interested in the naming of settlements. Unexpectedly, the state announced a closing of the canal at Sault Ste Marie. It was at the height of the shipping season—a season that was doubling the cargoes of the previous year—and the mining companies, realizing the likely results, petitioned the state board for a postponement.

In view of the enormous proportions to which the iron

trade from the Superior districts has grown, the petitioning document has become an important and interesting historical record. It follows:

"The trade in Lake Superior iron ore is just beginning to establish itself and it possesses the elements of indefinite increase. It now occupies four-fifths of the shipping employed on this lake, and will undoubtedly be the chief source of revenue to the canal. The ores of Canada and Missouri have been brought into close competition with Lake Superior ore and at the points of consumption of more than four-fifths of it those ores meet our own on equal terms of facility of transportation and comparative cost.

"There is no essential difference in the purity of Missouri ore and our own—the development of the former has been stimulated and the cost of its production diminished by a state contribution of nearly $2,000,000 to the railroad which transports it to the river. The occupation of our markets by the Missouri and Canada ores the present season would be an advantage that could not be regained in years.

"The low price at which Lake Superior ore must be offered at the lowest lake ports obviously limits its production to the amounts that can be shipped at modern rates of freight during the most favorable season of navigation. Of the 30,000 tons shipped from this port last year not more than 1,000 tons were shipped after October 1. Its shipments must always be principally by sailing vessels, because it cannot bear as high a rate of freight, and as it is principally confined to the months of June, July, August and September. After the latter months not only is navigation of Lake Superior somewhat hazardous, but

the advanced rates obtainable for other freight precludes the shipment of ore.

"The companies represented are under engagement to supply this season some 60,000 tons; should the canal be closed during two of the above months it will be impossible for them to furnish more than half the quantity, and the furnaces which are their customers, will supply the deficiency for the winter's manufacture with other ores.

"Not only would this occasion the absolute loss to the canal revenues of the diminished amount of this year's shipments, but the undue advantage thus obtained at a most critical period of the business, by competing ores, would undoubtedly be perpetuated through several years in a comparatively diminished demand for our own product.

"Our companies are the pioneers of the iron production on Lake Superior; for ten years we have been continually increasing our investments and have made expenditures to the amount of more than $1,000,000 in the development of this production without ever having realized a dollar of dividends, or returns."

The state rescinded its action. The canal was kept open. Repairs, though needed, were made in the winter months.

The mine operators did better than they anticipated in 1859—they shipped 65,769 tons of iron ore and, in 1860, almost doubled this output with 120,000 tons. Then—war flamed across the nation and stagnation settled down on the Lakes through the years from 1861 to 1865.

Peter White set about forming a company of volunteers and was elected captain when the men themselves and the citizens of Marquette persuaded him that he was

worth more to the growing city than as a soldier in the Union army. Persuaded against his will the citizens kept close watch over him while his men marched away.

A year passed—another—and, another. From the iron country White watched the progress of General Grant and, becoming convinced that peace was soon to come, he set out to realize on an opportunity that, seemingly, none, save himself, saw.

With no other freight offered it had become a practice for a few captains putting into Marquette to take pig iron to the lower lakes on the speculation of selling it at a slight profit over the handling. Their speculations were successful just often enough to encourage them and when failing they always dumped the metal on the unloading dock to await the chance buyer.

White sensed that with the end of the war foundries and mills would be caught without adequate supplies so he began searching his records for the names of ships that had taken quantities of the material. At Detroit, Cleveland, Erie and other ports he located unsold cargoes and little effort was required for a repurchase of the iron, particularly in view of his offer of six dollars a ton, profit, to each speculator. With Grant in command of a victorious army White came to Cleveland passing, on the way, Johnson's Island, in Lake Erie, where 16,000 Confederate prisoners had been confined during the war.

"Want any pig iron?" he inquired at the Otis Foundry Company.

" 'Pig iron!' exclaimed Otis. "Certainly I want it. Got any?"

"Some."

"How much do you want for it?"

"What will you pay?"

Otis hesitated, then offered: "Forty-two dollars a ton for all you've got."

"You may not want that much," grinned White.

Otis was nonplused. "Can you deliver one thousand tons?" he asked, after recovering from his surprise.

"Yes."

"How soon?"

"Within a few days."

The order was filled. White had paid twenty-four dollars a ton and during the next two weeks he visited other foundries and mills and made a profit of $36,000. Before the year was over he was selling charcoal iron from his Bancroft furnace in Marquette for $85, $90, and $95 a ton, according to the grades. Incidentally, that is the highest price ever paid for iron in the United States. The Bancroft furnace was one he had been compelled to take over and manage after Stephen R. Gay, to whom he had loaned what little money he could spare, had failed to make it a success.

Peter White, who had sacrificed so much of himself for the development of the iron country, was beginning to be recompensed, in goods and chattels.

On the lower lakes other fortunes were in the making.

Alva Bradley had come to Brownhelm, which lies back of Vermilion, Ohio, from Ellington, Conn., when a lad eleven years old.

His parents could have continued him in school but, of an evening, when the boy threw his books in a corner and declared he was going to find a job there was no dissenting voice. He had learned the simple problems of arithmetic, could write, and could read, and that was all the education needed to start a man's work in a new country.

His first job was as a tamper in the coke ovens near the village but he was not long there. From the hills where he roamed in his spare time he could glimpse the waters of Lake Erie. Ships called, as they called many boys. He threw aside his rake as he had tossed away his books, and became a cook's helper on a schooner sailing from Vermilion.

Up through the ship he went, from cook's helper to a post on the bridge and while yet combing the stubbornness from his first beard he became a captain and then a skipper sailing his own craft.

Off to the south of Vermilion lay Milan and in Milan there was a young person who watched for the comings and goings of Captain Bradley. From the north, on the Canadian shores of Erie, watched another. Samuel Edison and Nancy Eliot were sweethearts and their communicating link, so to speak, was Bradley.

He carried their letters, and their little confidences to each other; he carried them when letters and little confidences no longer bridged the separating miles. He carried Nancy Eliot when she crossed the lake to marry Samuel Edison, just as their first-born—Thomas Alva Edison—was to carry his name in the after years of greatness.

A small, falling-to-pieces ledger, still in the possession of his grandsons, shows how Captain Alva Bradley began putting together one of the greatest fleets of vessels in the history of the Lakes. On the bottoms of the pages are smudges where the captain thumbed the sheets in making a record of his business. Two columns on each page were sufficient—one was for the year, the other for the receipts.

The schooner *London* was first, starting in 1858 and sailing under his flag until 1873. In 1858 the receipts were

$1,502; in 1859, $1,700; in 1860, $4,900, and in 1861, the best year, an even $10,000. Then came the schooner *Exchange,* in years from 1857 until 1873, and record receipts of $12,839 in 1867. Afterwards, the schooner *Wagstaff,* 1863 to 1887, and its best year of $13,400, in 1866. There are a score, or more, of names of other ships, with earnings showing a steady increase with the passing years and increasing size. There are no comments, only figures, to indicate when sails came down and smoke began drifting aft from Bradley steamers.

James Davidson was another name that was becoming known from Buffalo to the Soo.

Born in Buffalo, in 1841, of Scotch parentage, James Davidson's father was one of the sub-contractors in building the masonry work for the Buffalo breakwater. While still a boy—he was scarcely ten years old—his parents died.

A few years younger and sympathy would have found him a home—probably a good home. But now, at ten, he was tall and wiry—too big for adoption. In those first few days after death they thought they comforted him by patting him on the shoulder and telling him he was a man. They were wrong. He was a boy, and he was terribly lonely. The little estate was insufficient to carry him through school; in truth, it was so small there could be no thought of anything but work. There were those who would have helped; pride sent him to the docks. He would make his own way.

He tried to find work as a cabin boy. He was too young, the captains said. He got a job rowing a punt from the dock to a small island a few hundred yards away. Pleasure parties liked to have picnics over there and the lad managed to clothe himself, find a place to sleep, and

buy food out of the nickels and dimes his passengers paid him. And, too, he saved some of those nickels and dimes.

Finally he found a skipper who was willing to overlook his youth and he shipped on a sailing vessel. Perhaps the fact that he was not bargaining for wages helped—it could have helped, you know. The following winter he found a job ashore in the shipyards of Bidwell & Banta, in Buffalo, and with the money he had carefully saved, he started attending evening sessions in the Bryant and Stratton Business College.

That was his routine—ships, shipyards, and night school—until the winter of 1860-61 when he became a sailor for the Black Ball Line's famous fleet of clipper ships sailing out of Boston. He was on the clipper *Panther* when it made the run to Liverpool in twenty-eight days and, also, sailed the Black Ball schooner, *Great Western,* which had accommodations for 1,300 passengers.

But if the owners of the ships thought they had, in Davidson, just another sailor they were mistaken. Now twenty years old, Davidson was planning beyond a life furling topsails and reefing mainsails. His ocean voyages were furthering his education of ships for, almost, they formed his only interest. It was not enough that he go to Liverpool—from there he shipped to India and then sailed off for Russia.

Returning to the United States he enlisted in the government service and was assigned to the post of first lieutenant on the U. S. Schooner *Watchful* then operating in the lighthouse service on the Great Lakes.

At the close of the war he became first mate under Captain Bradley, of Buffalo, and in partnership with the skipper bought a half interest in the schooner *Sea Gull*, an

old ship, of 150 tons. He gave $300 in cash and his note, secured by a mortgage, for $300. His salary was $50 a month for a season of eight months, which meant he had to husband his finances if he were to pay off the indebtedness at the close of the year, which he planned.

At the end of two seasons he sold the *Sea Gull* at a profit of $200 and purchased the schooner *Philena Mills* for $4,500. By his handling of the *Sea Gull* transaction he had established his credit and at twenty-six years of age he was sole owner of a fine ship. Captain, too.

The same intensity of pride that had kept an orphan from seeking sympathy was now driving a man towards a destiny of usefulness.

Bradley, Davidson, and other shipmasters and shipbuilders were beginning to see the end of brigs and schooners as cargo carriers about the same time that J. D. Bothwell, of Bothwell & Ferris, dock operators in Cleveland, was watching a small engine lifting spiles preparatory to driving them into the river bed for the Cuyahoga, in Cleveland.

It was in 1867 and Bothwell wondered why such an engine could not replace horses in the unloading of ships. With the purpose in mind he asked Robert Wallace, an engineer, to design a suitable, portable steam engine. A few weeks later delivery was made on a 6 by 12 machine which could be moved about the dock to any position and the first vessel to come in was the bark *Massillon*, with Captain Smith Moore on deck.

As lines were fastened, the captain bawled:

"Where's yer horses?"

"We are going to try out this engine for unloading," explained Bothwell.

The captain laughed, then his face reddened in anger.

"I've four hundred tons of ore aboard," he yelled. "Get those horses. I'm not going to trust unloading this ship to any blankety, blank toy. Come on. Let's get to work."

Bothwell argued. The captain raged. But, in the end, Bothwell had his way. The *Massillon* was unloaded in a day.

Man power continued to wheel the loads from the decks to the docks but machinery came in to dig the metal from the holds of ships. A few years more and the clank of power was to replace, entirely, the sweat of men, and horses.

The old days, with their rigging and their spars, were passing and passing with them were shovels and pickaxes and straining backs.

Chapter Ten

A GREAT HERITAGE IS PASSED

MEANWHILE, in Cleveland, a man was carrying on a tradition and passing to his sons a great heritage.

Samuel Livingston Mather came to Ohio in 1845 from Connecticut where his father was an executive in the Connecticut Land Company. Around the Mather family had been written much of the early history of the nation and now, in Cleveland, Samuel L. Mather was beginning an enormous contribution to the history of the Lakes.

His had been a strong hand behind the affairs of the Cleveland Iron Mining Company. His had been a purse out of which the operations had been continued from their beginnings. His had been a mind that had guided the company through disheartening years of unprofitable enterprise. No man could have, nor would have, been called weak had he forsaken the venture—many men who were not weak had gone from similar undertakings in the same region—but Samuel L. Mather, with all the tenaciousness and optimism that permitted his forefathers to carve their unforgettable lives against a background of wilderness and savages, could not relinquish that which he held.

Secure in the faith that time would prove him right he smiled in encouragement when those, even such as Peter White, brought him discouraging reports and he shook their hands to send them back to the south shores

of Superior, feeling just a little ashamed of themselves for their gloomy predictions.

From his farm lands, Richard Mather, first of the Mathers in Colonial America, had seen the small beginnings of a nation; now, in Cleveland, Samuel L. Mather was turning his mind towards the north country and was visualizing this same nation growing great because of iron.

History, as written, is largely the recital of doings—and goings-on—of emperors and kings, warriors and statesmen. It is not too much to expect that, some day, the accomplishments of men in peace and industry will find a place in the records of Time. The day will come when the character, Iron, will be of more importance in the written drama of Life, than the conqueror, Napoleon.

Roads come, farms are tilled, grain goes to market—because of iron. Ships move, trains run, automobiles travel, airplanes fly—because of iron. Cities grow, factories are built, men find work—because of iron. No other metal is so valuable to the needs of people and when the day comes for the recording of the widening history of man the development of the iron mines in the Superior country will hold more historical attention that the destructive sweep of a Genghis Khan.

To Samuel Livingston Mather must attention be given for his courage and his faith in the hills and valleys in the iron country. Already, his mind was beginning to reach farther west—to the wild lands that lay back of Duluth. There was not much to Duluth in the early sixties. In the background, a mountain and where the mountain's feet touched the shores of Superior squatted futile little shacks, called dwellings, and running through them a chute of low frame buildings that formed the business thoroughfare of the community. Living had gone on

pretty much as it had in the days of Father Marquette and his missionary priests. Indians, Traders, Trappers—and, for years, Indians, traders, and trappers had been bringing down stories of iron.

Duluth, more concerned over immediate requirements, went on catching fish that it might eat and felling trees that it might be kept warm in winter time, shrugged its metaphorical shoulders and reproved the tale-bearers:

"What of it? What if the iron does show in outcroppings above the surface of the ground? Now, if you had told us it was gold that would be different—a man could pack out enough gold to feed and clothe him the rest of his days. But—iron! Who could carry enough to pay for a can of beans? And, if he did carry enough who would be so foolish as to trade him a can of beans for it?"

But there were others not so apathetic over the presence of iron in Minnesota. In 1850 David Dale Owen, and a group of associates, had made a geological study of Wisconsin, Iowa, and Minnesota and one of the party, J. G. Norwood, had made the first—so far as is known—public utterances on the existence of iron in Minnesota. These utterances were based on his examinations of what is known as the Gunflint area of the Mesabi range where the Paulson mine was later located.

Specimens of high grade hematite ore from this section were shown at the International Exposition in Paris in 1867 and in the same year the Smithsonian Institution, in Washington, was distributing specimens of this ore to such academies as applied for them.

But circumstances were to prevent Samuel L. Mather, and all others who were interested, from immediately going into Minnesota—the opening of the now famous Mesabi range was not to come for some little time. Iron,

in increasing quantities, was being taken from the mines of Marquette, Ishpeming, and Negaunee. As much, almost, as carriers could load and carry to the mills and furnaces of the lower lakes. There was little need for making explorations in a region where few boats came and to where captains would not go while cargoes were so plentiful closer by. And, too, other circumstances were to serve in bringing about changes on the Lakes before the Mesabi range could come into its development.

The winds of a terrific storm were to go hounding down the waterways ——

Riding on a gale from out of Superior the storm slashed its way across Lake Michigan, blasted down through Huron, paused at Erie to pick up the shallow waters and roll them into seas of foam and destruction and went on to Ontario where, in spent strength, it scudded up the St. Lawrence.

From Pigeon river to Sacketts Harbor shore lines were littered with masts and spars, hulls and sails, life boats and life belts—and in the life belts—dead men. In Cleveland and Chicago, Detroit and Buffalo, Conneaut, and Saginaw men watched for ships that would not return and women waited for those who would not come.

Through four November days, in 1869, the most disastrous storm in the history of the Lakes struck, with hurricane blows, and drove before it one steamer, six propellers, one tug, eight barks, four brigs, fifty-six schooners, eighteen scows, and three barges—a total of ninety-seven ships, lost or smashed, and a much greater loss in lives.

Shippers and sailors, looking over the list of the lost, could not fail properly to appraise the value of steam-driven craft over the uncertainty of sails on these waters where sea room was so confined. In the year of the

storm a man—chosen by destiny, perhaps, to do much in changing the character of lake boats from sail to steam—was adding theory to practical knowledge in the New York office of Joseph Belknap, first supervising inspector general of the United States Government.

Frank E. Kirby, who died almost while these lines were being written, was born in Saginaw, Mich. His grandfather and his father were sailors on the Lakes and it was natural, probably, that Kirby should want to follow them. When seventeen years old, and finishing high school, his father asked him:

"Frank, what do you intend doing?"

"I'm going to be a sailor."

The youth argued. Pleaded. His father decided:

"I have written to Jesse Hoyt who is, as you know, one of my best friends, and he has answered telling me he will be glad to have you live with him and he will watch over your studies, and help you. You are to enter the Cooper Institute, in New York City."

The rush of the big city fairly smothered the boy. Mr. Hoyt was kind to him. Very kind. But did not know the homesickness Kirby had for Saginaw Bay and the ships coming there. Of mornings, when asked why his eyes were red, he always told them he studied late. One night Mr. Hoyt crept into his room to find him crying and in the torrent of words Kirby confessed the secret of his homesickness.

"Why not go down to the Bay tomorrow and see the ships that come to New York?" suggested the understanding Hoyt.

The following afternoon, when classes in the Cooper Institute were dismissed, a boy from Saginaw walked to the docks and stayed there until dusk. From one dock to

another he wandered, staring in open-mouthed wonder at steamers from Europe and windjammers from the Orient. That night, when he returned to the Hoyt home his eyes were bright and he could scarcely eat his supper for telling of things he had seen.

The next day found him on the docks once more—and so did the days that followed. He made friends with sailors, with mates, with engineers and pilots. It got so he did not go to school, at all, and when he was offered a job as assistant engineer on a ship that was going around the world, Saginaw, with its bay and its shipping, was forgotten. He hurried to tell of his good fortune.

"Your father will object," cautioned Mr. Hoyt.

"It will be too late," answered Kirby. "The ship sails tomorrow and the letter I am writing tonight will not reach him until I am on the seas."

For supper, that night, the Hoyts had Joseph Belknap as a guest. During the meal, and afterwards, the men talked of ships and cargoes and were in agreement that the day of the sailing vessel, and wooden ship, was nearing its close. Finally Belknap observed:

"You know, Jesse, if I could find a good draughtsman for an engine I'd build a ship, or two."

Kirby was interested. He waited, hoping there would be a continuance of the conversation along the indicated path. There was not. The men went on with their general discussion.

The next morning, while going down Broadway, Kirby again met Belknap, greeted him and went on. He had gone but a few steps when he felt a hand on his shoulder and heard a voice:

"Kirby, Mr. Hoyt was telling me last night of your plans for today."

"Yes, sir."

"Have you written your father?"

"No, sir. Not yet."

"Where are you going now?"

"Nowhere, in particular."

"Come with me. I want to talk with you."

Together they went to Belknap's office where Kirby was offered the job of designing an engine for a ship. He accepted, immediately. The trip around the world was postponed.

His first job with Belknap was tracing three-foot valves for the Croton Dam. Later he got to building engines and in 1870 he came back to the Lakes for what he intended as a visit but which extended into nearly sixty years of shipbuilding.

In the summer of 1870, going by train from Detroit to Saginaw, he met Captain E. B. Ward. In the few hours' ride the men became well enough acquainted for Ward to say:

"The commerce of the Lakes must be built all over in iron. The day of the wooden steamer has gone."

Kirby smiled. Only a few years before he had heard Hoyt and Belknap use practically the same words for the future of ocean shipping. Ward was looking from the coach window as the train neared Saginaw when, half to himself, he said:

"I've always had an ambition to build an iron steamboat. Some day, I will."

"Why not let me build it?" suggested Kirby.

Ward laughed. "Young men amuse me. I suppose you can build a shipyards with a wave of your hand."

"Scarcely that, but I can build the shipyards."

For the next few minutes, while the low-hanging roofs

of Saginaw were dropping back, Frank Kirby talked fast and enthusiastically. The two men were still sitting together, bent over figures Kirby was making, as the train stopped and they got off together to go into the station.

"Kirby, I like your ideas," declared Ward, "and only wish we had a contract ready so we could sign it and you could go to work."

Kirby excused himself, borrowed a couple of sheets of paper from the station agent, and wrote out an agreement. Carefully reading it, Ward chuckled, signed his name and said:

"Young man, my guess is you'll get along in this world."

With the contract in his pocket the first thing Kirby did was to go to a telegraph office and wire his resignation to Joseph Belknap. He then went to his father and together the two men organized the Detroit Drydock Company, at Wyandotte, just below Detroit. Then they went to Scotland, hired twenty-two men from out of the shipyards along the Clyde, and brought them back. Their first ship was the *E. B. Ward, jr.*

In other places along the Lakes the staccato hammering of rivets into iron flanks was beginning to be heard. But, in spite of the growing interest in iron vessels and an increasing recognition of their worth, there continued to be a greater demand for wooden ships. That was understandable. They cost less to build, less to operate, and were the ore, lumber, and grain carriers of the Lakes. The time had not yet come when cargoes of great bulk were imperative.

From the blue waters of Superior down to the shallow depths of Erie schooners and brigs tacked and rode with the wind in bringing their small offerings of iron—

a few hundred tons to the load—and in the rivers at Sault Ste Marie, Port Huron, and Detroit tugs went to meet them and to haul them, five and six in row, to waters where they could again spread their sails.

Shipbuilding was not a secure, nor a steady, business. The first requirement was to get an order for a vessel. If the order was secured in Grand Marais, Saginaw, Bay City, Alpena, or Marquette the ship was built there. A piece of ground on sheltered water, near timber, was rented and the shipbuilding gang invaded the forest where oak timbers for the hull were sawed by hand while masts and spars were trimmed and fashioned with axes.

Obviously it was a wasteful practice but that scarcely mattered. There was plenty of timber. Men were glad to have work and it was cheaper to rent ground, slash out the trees and haul them to the frame on the water's edge than it was to have a permanent investment.

A Scotsman, or, rather, a boy born in Buffalo of Scotch parentage, was getting ready to change that practice. In 1870 James Davidson, whom you will remember as the orphan whose pride kept him from seeking sympathy, went to Saginaw. He built a sawmill, bought his timber and in record time launched the schooner *Kate Winslow*, then the largest ship on the Lakes.

With that accomplishment he returned to Buffalo and those who had insisted that what he was planning could not be done came to see him and to listen while he told them of savings he had effected. First a ferry boy, paddling a punt, then a sailor, then a captain, James Davidson was now showing shipbuilders how to build—and how to make theirs a permanent business.

Chapter Eleven

DEEP FAITH AND HIGH COURAGE

Not far from the Marquette district which was supplying the iron cargoes for these larger ships, and sheltered from Superior's storms behind Keweenaw Point, lay the village of Ontonagon. In Ontonagon men had become excited over news which had failed to interest Duluth. On this night leading citizens had gathered to listen to a story of iron, brought by one of their own.

Peter Mitchell, his face flushing because he was unaccustomed to speaking before so many people—nearly a score were there—was telling a tale that had been told to him by members of the Wieland family, of Beaver Bay, Minn.

As he finished L. Willard, spokesman for the group, asked:

"How well do you know this Wieland family?"

"I've known it nearly all my life," answered Mitchell.

"You believe what has been told you, and what you have told us?"

"I do."

Turning to the others Willard cried: "What do you say, men—shall we back Peter Mitchell and send him into the Minnesota country to look for iron? I, for one, am willing."

"I will." "I will." "I will," came other voices and the money was put up that night, most of it being supplied

by Willard, James Mercer, L. M. Dickens, L. J. Longpre, L. Stannard, and Mitchell.

That was in the spring of 1869 and soon afterwards Mitchell was establishing his base of operations at Beaver Bay. Through 1870 and 1871 he traversed the entire Mesabi Range and on one of his trips crossed over to the Vermillion district to where the city of Tower is now located.

Here he found a great outcropping of iron!

It is interesting to speculate on what thoughts were Mitchell's as he stood, staring at the outcropping. Amazement was in his features, undoubtedly. Joy, unquestionably. Here was wealth, and he knew it. Of course, he did not know that the land, for miles around him, was to give up not millions—but billions!—of dollars' worth of the red metal; that corporations—the United States Steel Corporation, for one—were to grow great because of the richness of the district.

But, he did know that here was a fortune, exposed. He surely thought of the spring night in Ontonagon when townspeople had gathered about him and wished him—and themselves—luck in the quest for iron in Minnesota.

Born to the woods, and methodical as woodsmen were, Mitchell, after filling his pack from the outcropping, probably sat down to write in his diary. Because he was a simple man perhaps he wrote such simple words as these:

"Found iron. Filled my pack. Left, at once, for Beaver Bay."

No one knows what he wrote. He is dead and the little diary he so faithfully kept that his associates in the under-

taking might know all that happened was destroyed a few years later when fire swept through Ontonagon.

But, he did go to Beaver Bay. From there he set out, with his samples, for Duluth. Most of those to whom he showed them merely yawned. Some inquired: "Didn't see any gold or silver, did you, Pete?" Others, one other, at least, thought enough of the discovery to send some of the ore to Charlemagne Tower, in Philadelphia.

James W. Munro, a friend of Mitchell, wrote of that happening to W. G. Smart, of Babbitt, Minn., and Munro's letter is now in the archives of the St. Louis County Historical Society.

A portion of it:

"Perhaps it is telling the exact truth that some of the same (the sample sent to Charlemagne Tower) was the stepping stone to the formation of the Minnesota Iron Company and its later activities. Mr. Mitchell also took samples from the Mesabi but such ores contained too much titanium for commercial purposes. It is perhaps safe to say that this was the first commercial iron ore to be taken from Northern Minnesota and brought to the attention of the iron industry of the country.

"It is a fact that Mr. Mitchell was advised by one of the Wielands to take up the Vermillion tract but for some reason he was inclined to favor the Mesabi range and turned more attention to that district. Having believed he had located a great deposit of iron ore on the Mesabi he began to test pit the lands there either in the spring of 1871 or 1872.

"Valuable lands having thus been located, the next question was to secure the same. At the time of the first exploration by Mr. Mitchell the meridian had been run

only a short distance above Duluth. So the lands were unsurveyed. To secure this the pool sent Mr. Mitchell to Washington. Great difficulty was met with in securing an appropriation for the survey and then great delay on the part of the surveyor-general in taking up the work. Had it not been for the influence of Senator Ramsey it is safe to say it would not have been commenced at all at that time.

"The survey made, the Ontonagon pool entered the 10,000-acre tract which later on was the holding of the Mesabi Iron Company. Other lands were to be taken as soon as proper arrangements could be made but owing to the sudden death of Mr. Willard the activities of the pool came to an end in 1876.

"Such is a brief sketch of the life and work of the first real explorer for iron ore in Northern Minnesota's great iron region. Being first on the ground, the Ontonagon pool did not secure success. Perhaps the sudden death of Mr. Willard was the direct cause, for there were other lands that had been passed on by Mr. Mitchell and recommended by Professor Agassiz, who had been retained by the pool to examine the same and report thereon. But the way had been paved for others and led to the opening and development of America's greatest iron field.

"Mr. Mitchell possessed a large frame and was a man of most excellent habits. He stood the storms and dangers of frontier life and that of the woodsman without complaint. That he did not secure the wealth that came to many of his associates was no fault of his. It was his fate. But his name must ever be associated with the early iron history of the State of Minnesota."

Elsewhere in the St. Louis county historical papers can be found references to the difficulties Mitchell, and his associates, had in taking up ore lands. Among the writings are these paragraphs by William E. Culton:

"When the Indian title was extinguished by the Treaty of Washington with the Indians in 1855 all the lands around Hibbing became public lands, the property of the United States and subject to land laws. But, in 1855, and for some time thereafter, the land laws were not, in general, applicable or operative in the Hibbing district because the lands were not surveyed.

"Generally speaking, lands cannot be taken, or could not be taken in those days, until they have been surveyed by government surveyors and placed upon the market in the land offices. Much has been said and written about fraud but there was not so much of it as has been oftentimes claimed. The script right was a right to take land which the government gave to persons, or corporations, who had lost some rights by reason of governmental action and who, it was believed, were in equity entitled to compensation for the loss.

"This compensation would be made by a right to take equal land in an area elsewhere. This script was usually assignable and speculators bought it and sold it in the open market, making the necessary transfers when entries were made. The mineral laws of the United States never had any application to this region. This was because in the beginning, when land laws were made, no one dreamed that minerals of any value existed in Minnesota. It was considered to be purely agricultural and timbered.

"Therefore, we were met with the strange condition of lands valuable for minerals subject to laws which, in

general, were designed for agricultural and timber countries. On account of the heavy forest which covered the country, the agricultural laws had no proper application to this region and yet the Homestead and timber land laws were legally applicable thereto.

"It may be admitted that the land laws in Northern Minnesota in the mining and timbered regions were loosely administered. There was much fake homesteading, there was much shuffling of scripts; there was much private trading sale—but, after all, it was a speculative time. Adventurers came to the new country to make money and not to save up lands, timber and ore for some future generations."

But, not all could be so lightly classed—"adventurers to a new country."

The story of the Minnesota Iron Company and the Soudan mine on the Vermillion Range, is but one of the romantic stories of this great development. It is romance. Deep faith and high courage. Faith in an undertaking and courage that could not admit defeat when, so often, defeat came.

To build a large enterprise by anchoring foundations in the morass of prejudice and incredible difficulties is presumed to be the prerogative of youth; neither of the two men who had so much to do with the organization of the Minnesota Iron Company had their lives to live; largely, they had lived them.

George C. Stone was past sixty years when he moved from Duluth to Philadelphia to engage in the manufacture of stratina, a cement for mending china and glassware. Charlemagne Tower, living in Philadelphia, was seventy years old and had built a fortune of $3,000,000

out of a lifetime of practice of the law and the development of coal mines. He had been an ambassador to foreign courts, and the honors and wealth which had come had made for contentment in the last years of life.

Stone, in Duluth, had become acquainted with George R. Stuntz, explorer and government surveyor, and from Stuntz had learned of the presence of iron in the country about Vermillion Lake. Now in Philadelphia, in 1874, he was impatient with his small business. Its possibilities were clouded and his thinking turned to conversations he had had with Stuntz.

He began writing letters to old friends in Duluth, asking for all possible information on the iron fields and it was while he was conducting this correspondence that samples of the ore mined by Peter Mitchell came to him. With these samples in his pocket he sought out a number of men of wealth, among them Mr. Tower. None was interested save Mr. Tower who regretfully said:

"If I were younger—even ten years younger—I would go into this proposition. But, at seventy years of age, man, when he has all he needs, and more, doesn't seek new things."

Stone argued. Tower receded, a little, from his position but continued to shake his head. Again and again Stone went back finally to gain Mr. Tower's consent, with a condition attached:

"I will organize a mining company if my partner, Munson, can be persuaded and if a fellow I know reports favorably on the property."

"Who is he?" inquired Stone.

"A geologist named Chester over at Hamilton College. I know him but first let us see what Munson says."

The partner was willing and Professor Chester was instructed to go to Minnesota.

Months went by and then Mr. Tower, reading what Chester reported in careful language, became excited. Stone was summoned.

"The geologist is satisfied," cried Mr. Tower. "We've got to have some one manage the property and you are the proper man." Stone accepted a salary of $5,000 a year and an agreed interest in the undertaking.

The first step was to acquire title to the iron lands. This was done. The next step was the formation of the Minnesota Iron Company, to which Mr. Tower conveyed the properties. The company was incorporated with an authorized capital of $10,000,000 and 80,000 shares of the stock were issued to Mr. Tower and Mr. Munson at $5.16 a share while Mr. Stone was given 3,000 shares for which he gave his note, bearing 6 per cent interest, to Mr. Tower.

Scarcely had the company been formed when Munson approached his partner, saying:

"I'm sorry, but I'm afraid of this thing. Friends in the mining business tell me there is no chance for ore in Minnesota becoming valuable while I live. They have persuaded me to get out. Better we both get out before our investment is any bigger."

In exasperation Mr. Tower cried: "You can't get out now that we have started a company."

"I can sell my stock."

"To whom?"

"I don't know."

The men argued, Munson trying to get out and Tower trying to keep him in. Finally, Mr. Tower took over his partner's holdings, paying him exactly what they cost.

Edward Breitung, connected with two iron mining developments in Michigan, was then interested and through him George H. and Samuel P. Ely, of Cleveland, were sold additional stock. The ink was scarcely dry on Breitung's certificates when he sought out Mr. Tower:

"I've changed my mind. I have so many other investments that I cannot see my way clear to continue with the Minnesota Iron Company."

Much against his will, Mr. Tower was compelled to buy the stock.

Chapter Twelve

A LEGISLATURE SETS BACK THE CLOCK

TO DEVELOP the holdings it was necessary that a railroad be built from the mines to Lake Superior and to do it a land grant was needed from the State of Minnesota.

The legislature had already adopted a constitutional amendment stipulating no more grants should be made but Stone, searching the records, discovered that some time previous a grant had been issued to the Duluth & Winnipeg Railroad Company but the company had failed to build the line on which it was based.

"I will try and get the legislature to transfer this grant to the line we are planning," he told his partners.

Stone then had a bill introduced which called for the transfer of the grant to the Duluth & Iron Range Railroad Company and with the introduction the Duluth & Winnipeg fought to retain the land. In supporting his arguments Stone referred to the failure of the opposition to do what it had promised—and this was the best argument of all.

While the Duluth & Iron Range was still in theory and the Duluth & Winnipeg was now in fact, the legislators wanted a railroad. They cared little by whom it was built—just so it was built. They could not help being impressed by the earnestness of the applicants and the frequent mention of the name of Tower.

As the last hour of the last day of the session ap-

proached no vote had been taken and, in the general jangle of voices it seemed as though none would be taken. Midnight came. The clock was turned back, an hour. Again the slim hands swung around to the top of the dial; again they were turned back. For a third time—and in the last balloting, by a slim majority, the Duluth & Iron Range was given the grant.

But even this victory did not have the hoped-for effect. It did not make a market for the railroad company's bonds.

J. H. Gruber, for several years secretary and assistant to George C. Stone and, in later years, one of the important figures in the Minnesota iron fields, afterwards told:

"The time had come when money was necessary in heavy amounts to build the railroad. Sixty dollars a ton for steel rails and forty dollars a ton for iron rails was the price. There were so many other things that money just went—quick, like that! Supplies were got in by sled in the winter months and the mines were inaccessible to wagons in the summer months. But, somehow, the railroad was built.

"Extraordinary efforts were made by Mr. Tower and Mr. Stone and also by the Elys to interest more capital but apparently insuperable difficulties presented themselves. The enterprise was looked upon as highly experimental and neither the stock in the iron company nor the bonds of the railroad were salable on the outside. Mr. Tower had to take practically all the bonds. The iron company held all the stock of the railroad company because no one else wanted it.

"There was nothing to do but skirmish and Mr. Stone proceeded to borrow on Mr. Tower's reputation for

wealth. Banks in St. Paul accepted stock in the Minnesota Iron Company, so long as it had Mr. Tower's endorsement and another source of income was J. S. Fogg & Company, a firm of note brokers in Boston. Still more money was needed. Stone went to Lazarus Silverman, a Chicago banker, and borrowed in $50,000 amounts. For each loan Silverman received notes, guaranteed by Mr. Tower, and sweetened, dollar for dollar, by stock in the Minnesota Iron Company."

"More money!" "More money!" "More money!"

Every letter that went to St. Paul asked for it; every message to J. S. Fogg & Company breathed of it; every bit of correspondence between the company and the Chicago banker concerned it. In Philadelphia Mr. Tower was reaching the end of his resources. His fortune of $3,000,000 was in a hole in the ground up in Minnesota.

In deep despair he wrote a letter and signed a check for $100,000. "To obtain this," he said, "I have sold the last of my marketable securities. Some Erie bonds. I must have the next instalment on my bonds, or I cannot live."

Mr. Stone met that instalment by borrowing more money from the note brokers.

Once more Mr. Gruber recalls:

"The procurement of funds to meet expenses was so precarious that Mr. Stone usually could not tell until about the last day where the money was coming from, or if it would come at all. Monthly payrolls, among other things, had to be met but, somehow, Mr. Stone always found the money. The banks in Duluth were not strong enough to meet large checks on short notice and under the existing conditions it was impossible to give them any notice so it became necessary for me to go to St. Paul from Duluth each month to get the money for the pay-

roll. I would draw the money at the First National Bank, take it away to the company's office, put it in the vault until train time at 11 o'clock at night and, then, all alone, would carry it to the station three blocks away and take it into the berth with me.

"I was keenly alive to the risk but I never lost a cent. The least of these sums was $18,000 and the highest something over $37,000.

"After awhile, the pressure keeping up, a receivership was in sight and Mr. Stone was laying plans to be appointed as receiver. I remember Mr. Tower saying in one of his letters 'it will be a pity to let this thing stick in the mud.' It surely was in the mud and everything depended upon Mr. Stone's efforts to get it out.

"But Mr. Stone succeeded in keeping things together, and in 'raising the wind' here and there in various ways. The reward these men reaped by their admirable faith, courage and skill was well earned. Mr. Tower got back his entire investment of $3,000,000, with a profit of a like amount, while Mr. Stone received something like $500,000."

The group that came to help Mr. Tower consisted of three men who, in Cleveland, had organized a partnership that was to grow into great power. The three men were: Colonel James Pickands, Samuel Mather and Jay C. Morse.

You are going to hear much about them.

And now for the other part of the story—the building of the railroad. It is told by William A. McGonagle, one of the builders and now president of the Duluth, Missabe & Northern Railway Company:

"After getting together our party we stepped off into the wilderness from Duluth to travel by sleds to Agate

Bay about twenty-seven miles down the north shore of Lake Superior. When we reached Knife river, about twenty miles away, we were forced to land on account of the open water, but we took to the ice again on the north side of the river and proceeded to our destination. We pitched our tents near what is now the land end of Ore Dock No. one where Thomas Saxton had built a log claim shanty. It was the privilege of a few of us to bunk on the hard timber floor of the shanty where, rolled up in blankets, we tried to sleep.

"The next morning it was snowing and continued to snow until there was at least four feet on the level. Nothing daunted, we started out our engineering corps. It was a desperate winter for outdoor work, living as we did in tents with temperatures running forty degrees below zero, and lower, but we kept plodding along, moving our camp every few days, until we connected our line with what was known as Case's line near the Whiteface river.

"This gave us a connected line all the way to Tower and we returned to Two Harbors to make a report to the chief engineer, Richard Henry Lee, and to the president, Charlemagne Tower, jr. Several changes in the line were decided upon to reduce the cost and we moved our camp back to Stone Lake in August, 1883, where we suffered torments from the mosquitoes that infested the swamps. But we lived through it and returned to Agate Bay in October to find the company already at work on the grading.

"This work was continued through the winter of 1883 and the contractors hurried the construction as fast as possible because the company had offered a bonus of fifty thousand dollars if the railroad was completed be-

fore August 1, 1884. It was. The first iron ore was dumped into the dock at eleven o'clock on the night of July 31, and the bonus was paid.

"There was much to do after the completion of the railroad. A merchandise dock and a coal dock had to be built, along with boarding houses, a hotel, a hospital and residence buildings. The hospital came early and was in charge of Drs. Ritchie, Fullerton and Alden. Patients were numerous and were lined up in beds which almost touched each other. It was an institution quite unlike our modern sanitary hospitals but it was the best that could be provided under the circumstances and the doctors had to put up with many inconveniences. When any of us had to be admitted we always joked about it and reminded each other of the placard in one of our frontier churches, which read:

" 'Do not shoot the organist. He is doing his best.'

"The coming of the first locomotive was an event long to be remembered. It was my privilege, along with Tom Owens and John Shea, to be a member of the party that brought this locomotive on a scow from the Stone-Ordean dock, at Duluth, to its destination on the Duluth & Iron Range rails on the shore of Agate Lake.

"This trip was made with the assistance of the company tug, the 'Ella G. Stone', named after the daughter of George C. Stone, the real founder of the Minnesota Iron Company, and of the Duluth & Iron Range Railroad. The tug was in command of Captain C. O. Flynn and much care had to be exercised in getting the locomotive properly placed and braced on the scow.

"We started out of Duluth harbor with our precious cargo and everything went well until we reached Knife

river where a northeaster began to blow and increased to such an extent that Captain Flynn gave each of us an axe and ordered us to stand by the lines that fastened the tug to the scow with instructions to cut the lines and abandon the scow whenever he gave the command.

"But the excellent seamanship of Captain Flynn pulled us through. We delivered our cargo. I can tell you, though, we had a pretty anxious time of it.

"The railroad was built into Duluth in 1886, extended to Ely in 1888 and to the Mesabi range in 1892."

The first shipments of ore were brought down from Vermillion in 1884; in all there were about 84,000 tons. The Soudan, Chandler, Pioneer, Zenith and Sibley mines were soon opened. The wealth of the range attracted capital and mine holdings, passing through several hands, always left, in each passing hand, riches.

But, while Vermillion was being opened, eastward, in Wisconsin and Michigan, events of important consequence were taking place.

On the Gogebic the tap of hammers and the cheers of pioneers were being heard.

In 1881, in Ishpeming and Marquette, men had pooled their fortunes to explore the country near Ashland, Wis., and had sent George A. Fay to confirm the confidences of Indians. Fay, like Peter Mitchell, kept a diary and from it are taken these paragraphs:

"I left Marquette in May with one helper and went to Ashland. Bought supplies and went to the mouth of the Black river in a small fish sail boat, with an Indian packer. From the mouth of the Black river we followed an old tote road or trail (that was used by copper ex-

plorers many years before, and was now overgrown with small trees and brush) for about five miles when it got difficult to find in places. We were making slow progress. We then made a bee-line across country and struck the Iron Range about where the village of Ramsey now is.

"After examining the range from Sunday Lake to Montreal river, we selected several locations that appeared to be promising and returned to Marquette by lake. We obtained options on what we considered desirable property, returned and began digging pits and trenches. We found good ore. It was in many places.

"In the winter of 1881 and 1882 we commenced exploring on several sections in Township 46-42, south of Gogebic Lake, and in Section thirteen there were sunk two shallow pits in one of which was some very rich magnetic ore in small bunches. I went to Rockland, Mich., hired a crew of men, and we toted supplies to the foot of Gogebic Lake. We left part of the supplies at the landing, took the ice in a blizzard for the mouth of Slate river, but brought up on the west side of the lake, about three miles from where we were headed, at a camp of railroad engineers.

"Probably the horses smelled the camp, for we were lost. We stayed overnight and the next morning went to the river. We started living in a tent but it got so cold, and we had to cut so much wood, that we put up a small shack.

"The formation here we found to be a hard, hornblende rock with stringers and small bunches of magnetite, with no probabilities of merchantable ore. Having come to this decision in the spring of 1882, we broke camp and crossed the lake on foot. We went to the Porcu-

pine Mountains, crossed them and to Lake Superior at the mouth of the Iron river and from there to Ontonagon. I wrote a report on April 24 to the Joliet Steel & Iron Company in which I advised against spending any more money in this locality.

"One of the tracts we had under option was the W½-SW Sec. 10, Tp, 47, R. 45, just east of Sunday Lake. The surface indications and locality of this tract appearing favorable, we commenced explorations on it about May, or June, 1882. We found good soft hematite ore in the fifth or sixth hole we sank. It was costing about one dollar per pound to furnish supplies at this time, our supplies coming from Ontonagon by team to the foot of Gogebic Lake, thence boated across the lake to landing on west side and packed from there to Sunday Lake, a distance of about twenty miles.

"We applied for a lease with the agreement that further development would not be asked for until conditions were more satisfactory as to expense for same. The Milwaukee, Lake Shore & Western were, at that date, constructing a railroad in Wisconsin and Michigan, the survey of which passed the south end and from there southwest to Sunday Lake and beyond.

"Mr. Wakefield, owner of the property, refused to give us a lease such as we asked for, and we did not consider it advisable to accept the lease he offered. We therefore abandoned all explorations at Sunday Lake."

As already told, Pickands, Mather & Co., formed in 1883, was early attracted to the Gogebic Range. The Colby mine, in the Gogebic, became one of its early investments and today, among other operations in that famous region, it operates the Sunday Lake mine over

which Wakenfield, Fay, and the others could find no agreement.

Ore was coming down from the Vermillion and the Gogebic and in Minnesota, near the Vermillion, the country was becoming pockmarked with the diggings and explorations of seekers for wealth.

Chapter Thirteen

"I'VE GOT WHEAT ABOARD, I HAVE"

But while Mitchell, and others, were prospecting for ore—while a railroad was being built and an iron range being opened, there were homesteaders in Minnesota and farther west who were not at all concerned over minerals, or timber, but who were tilling the black ground in search of crops.

A trickle of wheat had sifted through the canal at Sault Ste Marie in 1861. Now and again there were schooners, each carrying a few bushels and each with a captain standing on deck as they entered the locks and roaring that all might hear:

"I've got wheat aboard, I have."

And all of them, together, in the year of 1861, carried but 223 bushels of the golden grain.

Then, for nine years, there were no captains standing and shouting. Through nearly four of those nine years plows had rusted while men were fighting; in the other years the wide lands were opening. So that now, in 1870, in Minnesota and the Dakotas and in the prairies of the Canadian Northwest yellow heads of ripening grain were tossing in the warm winds.

Elevators were being built. Ships were being chartered. Wheat was coming down.

Before the close of navigation a total of 49,700 bushels had been carried through the canal. Another spring of planting, another summer of growing and another

autumn of harvesting. Before late November ice could shut in the canal more than a million bushels had been carried—to be exact, 1,376,705 bushels.

From Ontario to Superior men clamored for ships. Commerce through the Soo canal in the seventeen years of its operation had grown from a comparatively few ships and odd tons of this and that into these figures:

Steamers, 573; other registered craft, 1,064; net registered tonnage, 752,101; passengers, 15,859; coal, 46,798 tons; flour, 26,040 barrels; wheat, 1,376,705 bushels; other grains, 308,823 bushels; manufactured and pig iron, 57,216 tons; salt, 5,430 tons; copper, 14,562 tons; iron ore, 327,461 tons; lumber, 1,090,000 feet; silver ore and bullion, 464 tons; stone, 5,258 tons; general merchandise, 74,227 tons—a total freight of 585,583 tons.

Already the joke of 1860 relative to the building of a new canal had ceased to be that. There was a need for a canal that would accommodate ships in greater cargo and greater bulk and the federal government started building the Weitzel lock. The abundant and profitable freight of 1871 was being followed by a season of shipbuilding. James Davidson, in Bay City, had set the pattern with his *Kate Winslow* and everywhere around the Lakes was being heard the rip of sawmills and the clatter of hammers against iron plates.

Through 1872 and into 1873 spread the scramble. Cargoes were to be had by all who could bring them down from the mines and the fields. With each week records of shipments were falling and new ones were being made. Newspapers in lake ports kept headline type standing and under the standard of "another record" would tell the stories of new cargoes in ore, or wheat, or lumber.

American Locks at Sault Ste. Marie

Photograph by Margaret Bourke White
Permission of Fortune *magazine*

Vessel passages through the Soo that had seemed so frequent only two years before were now, by comparison, reasonably infrequent. In 1871 a total of 1,637 ships had registered; in 1873 there were 2,487. Wheat had increased from 1,376,705 bushels to 2,119,997 bushels; iron ore from 327, 461 tons to 504,121 tons; and the total freight figures had shifted from 539,883 tons to 888,432 tons.

A nation was beginning to depend upon the iron mines of Superior and the wheat fields of the Northwest.

In Cleveland, early in January, 1874, a man sat with the record figures before him. Mentally he was translating them into so many cargoes and so many ships. Now and again, while he calculated, he would swing around in his chair, gaze through a window and out across Erie's tumbling, gray seas. A hand would reach up to tug at his chin—he would turn to his desk again.

Years since Captain Alva Bradley had been compelled to relinquish his post on the bridge to the job of watching the fleet of cargo carriers he had assembled. In the little red ledger, now so frayed, he had written the names of six new ships that had been put into service the previous spring. At the top of each page was a name and in tight little columns were the receipts.

There was the *Chamberlain & Martin*, with receipts of $80,000; the *A. Bradley*, with $17,860; *S. J. Tilden*, $11,352; *Thomas Quayle*, $16,742; and the *A. Cobb* with a showing of $31,100.

Now he was turning to steam and planning ahead not for one or two years but for five—and, perhaps, ten. Not long before he had let contracts for two steam vessels and he had stipulated they must be ready when foghorns again sounded, showing that navigation lanes were open

for 1874. Those two steamers were to start a modern fleet. The building of others was in his mind. He was getting ready for an annual tonnage of many millions. Growing with him was a son, Morris A. Bradley, who, within a few years, was to pick up his father's work and carry it further.

When he was fifty years old Captain Bradley had balanced his books and said:

"I'm just even. My debts equal my assets. It's time to go to work."

So that now, he was in command of the largest fleet of cargo carriers on the Lakes. Not only were there many ships of his own but, on leases, he had acquired control of so many other vessels that it was said—and rightly—that "as Captain Bradley sets them so are the rates."

There were no meetings of shippers and carriers. No votes. No arguments. In the beginning of each season shipowners came to Captain Bradley with the question:

"What is the rate this season?"

They received their answer. It was an autocratic way of doing business but confidence in the dictator was such that no one considered a protest.

As an indication of the mine owners' trust an incident may be recalled. Near the close of a season when the market for iron ore was slumping one of the operators called to say:

"Captain, I've got a proposition to submit. You know the condition of the ore market. I am wondering if you will be willing to carry the iron on your ships from the mines to Lake Erie ports and do it without making a profit."

"What is the rest of the proposition?"

"That you will gamble with us on having a better

market next year. If we do sell at a profit we will divide with you. If we don't, well, that's the gamble."

The captain didn't answer for a few seconds. Then, getting to his feet, he put out his hand: "I'll send you the bill of the exact cost of transportation when the ships unload. Pay that and I'll gamble the rest."

"Thank you."

The following season was an exceptional one for ore and when the profits were split Captain Bradley was able to buy three more ships.

In a building a few squares from where the Bradleys were planning, two brothers were organizing the Cleveland Transportation Company and were listening to shipbuilders. One of the brothers was H. M. Hanna; the other was Marcus A. Hanna who, to drop into the vernacular, was "to walk with presidents and talk with kings."

Boisterous and gruff, Marcus A. Hanna wasted little time listening to proposals for the ships he and his brother intended building. He was growling:

"We have decided what we want and when we want it. We want two steamers and two schooners. When can you deliver them now that we have agreed on the price?"

Before they could answer he barked:

"Never mind figuring—we want them just as quickly as you can put them together."

The shipbuilders worked fast. They delivered the *Geneva* and the *Vienna*, steamers, and the *Genoa* and *Verona*, schooners, while the season was still under way. Within another year two more steamers and two more schooners were added and the fleet became known as the "Black Line" because all the vessels were painted black.

The Hanna company was to continue to play a conspicuous part in the development of the Lakes. It was the outgrowth of another group. In 1845 Daniel P. Rhodes, together with David Todd and James M. Ford, entered the coal mining industry with the operation of a mine near Youngstown. Later date Jonathan F. Card and George H. Warmington associated themselves with Mr. Rhodes and the firm of Rhodes, Card & Company was formed. This company was dissolved in 1867 and the business was continued by Rhodes & Company, which firm was composed of George H. Warmington, Robert R. Rhodes and M. A. Hanna. In 1874 James Ford Rhodes became associated with the company, which was then active as operator and agent for coal, iron ore and pig iron. The following year Leonard C. Hanna was admitted to partnership as was James F. Rhodes a short time thereafter.

In 1878, Rhodes & Company leased and equipped a dock on Whiskey Island, owned by The Pennsylvania Railroad, for the handling of pig iron, which was brought down in wooden vessels.

Since 1875 they had been acting as sales agents and warehouse merchants for various brands of Lake Superior charcoal iron known as "Elk Rapids," "Pioneer," "Munising" and "Marquette," which iron was thought indispensable for malleable and car wheel manufacture and Rhodes & Company had practically a monopoly on this grade of material.

In 1879 the firm purchased the Mabel Furnace at Sharpsville and a few years later acquired Claire Furnace also located at Sharpsville. At that time it was acting as agents for the sale of pig iron from Tuscarawas Iron

Company's furnace at Canal Dover, Ohio, and also handled black-band ore which was local to Canal Dover.

The latter part of 1884 Robert R. Rhodes retired from the firm and James F. Rhodes retired shortly after. Early in the year 1885 the firm of M. A. Hanna & Company succeeded Rhodes & Company and continued business under this name until December 9, 1922, when The M. A. Hanna Company was organized to take over the assets and business of M. A. Hanna & Company and affiliated interests in iron ore mines, bituminous and anthracite coal mines, lake vessels and blast furnace plants. Since this organization The M. A. Hanna Company has acquired substantial interests in iron ore mines, the blast furnaces and plant of Rogers Brown Iron Company, located at Buffalo, together with interests in other coal properties and steel companies. The business has grown until the company now handles a normal yearly combined tonnage of from fifteen to twenty million tons of iron ore, anthracite and bituminous coal and pig iron; the company's shipments having exceeded one million tons of pig iron, four and one-half million tons of anthracite coal, six and one-half million tons of bituminous coal and approximately seven million tons of iron ore in a year.

In September, 1929, a contract was entered into whereby Weirton Steel Company of Weirton, W. Va., Great Lakes Steel Corporation of Detroit and The M. A. Hanna Company's interests in iron ore mines, vessels, blast furnaces and coke ovens were consolidated into a new company to be known as National Steel Corporation.

A few years more. Over in England—at Claypole, in Nottingham—a boy of seventeen was devouring stories of American life. He determined to go, and see, if all he

read was true. With the same contempt for obstacles that was to grow as he grew, he set out.

Landing in Baltimore he found work on an oyster boat and earned his wages on Chesapeake Bay. After a few months of this rough life the youth admitted "this isn't much like what the books said" and grudgingly paid over enough money out of his savings to get a train ride to New York.

On Chesapeake Bay he had heard of the Lakes and reaching New York one of his first inquiries was:

"How far is it to Cleveland?"

He was told he could take a train at night and be there the following day.

Thinking of the few dollars in his pocket he requested more specific knowledge:

"How many miles is it?"

"Several hundred."

"Which way do you go?"

"Straight out Broadway and keep walking," came a facetious answer.

But the lad was in earnest. He started, and kept walking for 600 miles. Harry Coubly came to look at the Lakes—and look again—and never was he to look away.

He tried to find a job as a sailor, failed, and began haunting the employment agencies. One day he heard an inquiry for a stenographer—one who understood the Morse code, preferred.

"I can read the Morse code," Coubly remarked to a friendly stranger, beside him on the waiting bench.

"You can?"

"Stenography, too. I learned them in school in England."

"Why don't you speak up?"

He did and soon afterwards found himself installed as secretary to the president of the Lake Shore & Michigan Southern Railway. The calendar had been turned to 1885. About the same time forces were beginning to work that were to lead to the development of one of the most powerful organizations not only in the Lakes country, but in the United States—Pickands, Mather & Co., of Cleveland, and as time went on Coubly was to rise to a partnership in that group.

In Marquette was James Pickands. In Ishpeming was Jay C. Morse. In Cleveland was Samuel Mather. Now, for a moment, or two, see these three men and how they came together and, later on, you will also know how they attracted other strong men to them.

At the close of the Civil War James Pickands was twenty-five years old, a colonel, and without a job. As assets he had:

A resourceful mind. A sturdy physique. A little money.

After the excitement of war the humdrum of his home town of Akron, Ohio, held little attraction for him. Abruptly he turned his back and set his wide shoulders against the job of making a living in a raw country. He knew of the Cleveland Iron Mining Company's operations in and around Marquette and to Marquette he went to open a wholesale hardware and coal business. The hardware and coal business prospered. Colonel Pickands soon became one of the iron country's most influential men. Peter White was his friend; so was Fayette Brown; so was Jay C. Morse, who had gone to Ishpeming, from Cleveland, to look after the interests of the Cleveland Iron Mining Company.

Even without the record of their later partnership it

is not difficult to understand the cause of the attraction between Colonel Pickands and Jay C. Morse.

Before his association with the mining company Morse had been a clerk in a hardware store in Painesville, Ohio, which is not far from Cleveland. It was only natural the two men should become friends. There were other friends of whom they could talk on long winter nights; there were discussions of the hardware business; there were the needs of the mining company, in which each was interested—Pickands as a supplier and Morse as a buyer; there was the intense pride each had in an adopted country and each was of the same mind in predicting an important future for the Superior region.

While Pickands and Morse were finding agreement in each other's ways and each other's thinking, Samuel Mather was in Cleveland, after spending months traveling in Europe in restoring health to a body that had been cruelly hurt in a fall in the Cleveland mine at Ishpeming.

Impatient after years of inactivity, Samuel Mather, upon returning, had plunged into gaining a knowledge of business, and business methods, in the office of his father, Samuel Livingston Mather. The project that most intrigued his imagination was mining. The fact that he had nearly lost his life while investigating an iron deposit only served to arouse a purpose. The stuff of which he was made would have permitted no other decision but to go back, and pick up the threads of his learning where they had been snapped.

Thirty-two years old, tall and wiry of frame and the son of wealth, Samuel Mather might have chosen to sit in Cleveland and watch his life unrolling. He might have; but he did not. Idleness was not his way, any more than it was the way of those Mathers who had gone on before

him—any more than it was the way of his father, who was immediately before him. Work was not an obsession, nor was it ever to become that with him. Work was a necessity. Nothing more. Nothing less. He knew no other way to accomplishment.

Now he was working and now he was beginning to plan. On visits to Ishpeming he had come in closer contact with the increasing traffic in ore and, also, he had become acquainted with Morse. Had studied the agent and, satisfied with the scrutiny, had begun to include the man in his plans. But he gave no inkling of his thoughts until he had them fully matured. Then, and not until then, did he approach Morse, with a suggestion for a partnership to deal in iron ore, pig iron, and coal.

"I'll do it," consented Morse, and then suggested: "Why not talk with Colonel Pickands?"

"You mean the wholesaler in Marquette?"

"Yes. He has built up a fine business. Knows everyone worth knowing in these parts. Better than that, he has more than a working knowledge of the coal business. He would be a fine man for us and I think he will listen to a proposition."

To Colonel Pickands they went. The merchant listened, asked a few questions, smiled, and held out his hand.

The partnership of Pickands, Mather & Co. was formed. The year was 1883. The beginnings were rather small but were not long to remain so. The energy of three men, and men who were to come later, was too great to permit small beginnings to trail into smaller endings.

Designed to deal in pig iron, ore, and coal the pioneering spirit of the partnership was soon attracted to the developments in Minnesota. The three men stood by to

watch but, while watching, they did not lose sight of what could be done in other directions.

Within four years their interests spread to operating the North and South veins of the Colby mines; the ownership of the steamer *V. H. Ketchum*; the operating of the Ella and Fanny furnaces at West Middlesex, Ohio; selling the pig iron produced by the Ohio Iron & Steel Company, at Lowellsville, Ohio; an interest in the Essen coal mines in the Pittsburgh district and the sale of the coal produced from them.

In 1887 they could stifle their impatience no longer. They went into Minnesota to help Charlemagne Tower, Stone, and the Elys by acquiring interests in the Minnesota Exploration Company and the Minnesota Iron Company; also, they made a substantial investment in the Penokee & Gogebic Development Company.

In other places, than on the Vermillion, men were seeking iron.

Chapter Fourteen

"THERE IS IRON ON THE MESABI"

Among the seekers were seven brothers and an uncle —the Merritts, of Duluth. There were Leonidas, Alfred, L. J. Merritt, C. C., T. B. A. R., J. E., and W. J. Merritt.

In the laconic words of Alfred Merritt here is something of what happened:

"The year of 1889 the first work was done on what is now the Mountain Iron Mine. We took a crew of six men in by the way of Tower on March 17. Started from Tower with three dog trains, and we were the dogs. We went in by way of Pike river, and then to Rice Lake, then to Mountain Iron. We dug test pits and finally drilled. All work was done on S½ of S½ of Section 34, Township 59, North of Range 18 West. We found that we were too far north for the ore, and on going south found the ore on Section 3 and 4, directly south of our first work.

"No one who has not actually gone through the hardships and the discouragements of keeping a camp going out so far from the base of supplies can realize what one has to contend with. The raising of the money, alone, was no small job and, worst of all, the task of endeavoring to keep up the courage of one's partners.

"After the ore was found we then had to look for transportation. We went to the Northern Pacific Railroad and also to the St. Paul & Duluth Railroad, they being

separate at that time. Neither would do anything. Their officials did not realize the value of the Mesabi range and all of the great traffic which was to originate from the many mines. We hardly knew what to do. We were almost discouraged.

"Finally, we got hold of the Duluth & Winnipeg R. R. and they said if we would build down to Stony Brook they would make a traffic contract with us. We built a line from Mountain Iron to Stony Brook, a distance of 43 miles, with a branch off our line from the station called Iron Junction to Bibwabik, a distance of 18 miles. This line was completed in 1892. The year of 1893 we built into Duluth, because the Duluth & Winnipeg R. R. did not furnish the number of ore cars they had agreed to when we made the traffic contract with them.

"Our road, the Duluth, Missabe & Northern, built, in the winter of 1891-92 a total of 750 cars. The next year we built 750 more ore cars. The Duluth & Winnipeg railroad did not build any. St. Louis county offered us $250,000 worth of bonds if we would build into Duluth. We accepted the offer and also built into Hibbing from our main line at Wolf Station."

But Alfred Merritt does not tell the story—scarcely hints at it.

The Merritts had come to Duluth in 1853. Like most others in the community they managed to exist, but there was not much more to living than that.

Some of the settlers tried farming; some tried fishing and trapping; some tried timbering—none was successful. Where snow came in September not to leave until May life was hard. So hard that land claims were nearly all abandoned in 1857 and 1858 and in the winter be-

tween those years the populace faced death from starvation.

In the spring of 1858 Captain Ben Sweet, of the steamer *North Star*, posted a sign in the principal store. It read something like this:

ALL WHO WISH TO GO
BACK EAST GET IN
TOUCH WITH ME.
—Captain Sweet.

They thought the skipper was jibing them. Making sport of them because they had no money. A muttering of discontent spread. Threats were made:

"We'll ride Sweet out of town on a rail."

But a curious few went to the captain. Were amazed at what he told them and raced through the town yelling the news. When the *North Star* threw off her lines Duluth was practically depopulated. On the ship were more than 700 passengers and in Sweet's safe were more than 700 notes in payment of individual transportation. It is an illuminating sidelight on the honesty of these rugged characters to know that every note, save one, was redeemed.

The Merritts were among those who stayed and in the wild country the growing family of boys roamed the woods in search of adventure. There were bear, deer, rabbits—and fish in the lakes and streams. The Merritt boys grew to know the forests as well as they knew the narrow streets of Duluth.

The transition from boyhood to manhood lessened, in no wise, the hunting instincts. Only, instead of chasing the imaginary savages of boyhood or pursuing the deer to the kill, they searched for iron. The hardships through which they had come had fitted them with physiques

But in the summer of 1888 (the exact year is in dispute but 1888, probably, is correct) Cassius Merritt picked up a chunk of iron from the Mesabi and brought it to Duluth to show his nephew Leonidas, leader of the brother-clan.

"Lon," he cried, "you're right. There is iron on the Mesabi. Look-a-here."

Leonidas Merritt examined the chunk of ore, grinned, and asked questions. He called his brothers to him and all set out. Through the winter that followed they cut trails through the brush and in the spring Leonidas and Alfred, leading one party, reached a reddish strip of ground south of where Cassius had picked up his sample.

Here their wagon wheels sank through the carpet of pine needles and into soft, heavy soil. Curious, each brother scooped up a handful, sniffed at it and breathed to each other:

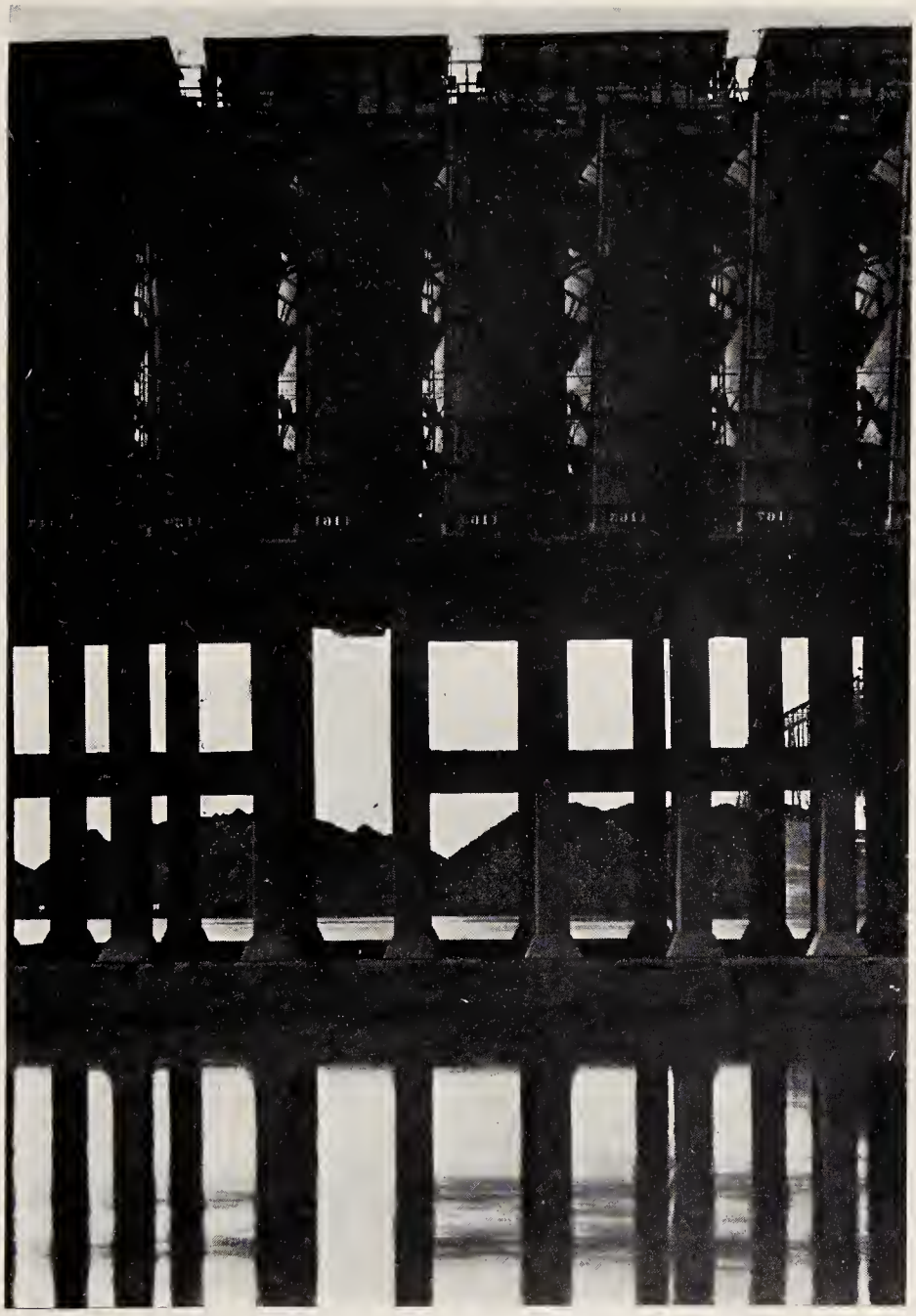
"That's iron!"

But there was no vein, no cliffs, no outcroppings—nothing but red, heavy, powdery dirt. No blasting here, no sinking of shafts—"all a man has to do, if this is iron, is to swing a shovel," cried Leonidas.

Money was running low and the brothers returned to Duluth, leaving their crew to sink a test pit. They had some pine lands. They made arrangements to sell them and returned to the workings where Leonidas cried:

"Keep on digging."

In another direction, some eighty miles north of Duluth, Wilbur Merritt and two of his younger brothers—Alva and John J.—were with another crew. They were in Section 8, Town 58, Range 18 and had met failure. Striding along the trail back to Duluth they encountered John McCaskill, a Canadian woodsman.



Iron Ore Docks at Superior, Wisconsin

Photograph by Margaret Bourke White
Permission of Fortune *magazine*

Dropping their packs the three men paused to gossip over a friendly pipe. As they finished McCaskill, knocking the ashes from the bowl and twisting them under an extinguishing foot, observed:

"In Section three, town fifty eight, range sixteen." He hesitated, then mysteriously added: "Drop your packs when you get there. Go south. Mebbe a hundred paces. There's something—under an uprooted pine tree."

"Iron?"

"Yup."

Wilbur Merritt frowned. "That ain't our land."

"I know it. John McKinley owns it. Him and me ain't much when it comes to trading tobaccy but I been thinking mebbe you can dicker with him. That way I'll be in on it."

McCaskill pushed along his way and the Merritts strode towards Duluth to swing off—to find the overturned tree—to see, as John Merritt afterwards recalled, "the red stain of iron." Eagerly they drove their shovels into the ground—here, there, all around. Iron was everywhere! Free and heavy. As easy to get out as dirt.

Covering their diggings they hurried on, hoping Leonidas would be in Duluth. He was not. They sought their uncle Cassius and together bargained with McKinley. McKinley was canny. Tried to learn what the Merritts knew and, failing, set a price of $60,000 for the fee to his property and insisted on a royalty of 25 cents for every tone of ore.

The Merritts cast around, learned that McKinley was heavily in debt and that his bank loans were overdue. They went back to him the next day. Offered him $30,000, with no royalties, and agreed to pay the sum within ten

days. They were taking a long gamble, and they knew it. The lands might be worthless—but, if they were not . . .

Quickly gathering together a crew they rushed back to the overturned pine tree and day and night, for seven days and seven nights, they dug holes—and started the now famous Biwabik mine.

On the tenth day they were all gathered in Duluth—Leonidas was there now. They stormed the banks and they would not be talked down. They borrowed the money on their own reputations and they paid McKinley his $30,000. Off where Leonidas had dug they began the Mountain Iron Company. In the east Rockefeller, Carnegie, and Frick were waiting to come in with their millions.

The Mesabi, giant of all the iron ranges, was open.

Yet, being opened, the difficulties were not at an end. The ore was so much finer than the old range ores that when put on the blast furnaces it sifted through the charge and, billowing towards the top, blew out the furnaces.

Furnace men in the Pittsburgh district cursed its dustiness even while admiring its richness and a great many iron makers frankly refused to accept shipments in which there was even a trace of it. Even as famous an ironmaster as Andrew Carnegie was stubbornly opposed to its use and during those wrangling years the entire Mesabi range could probably have been purchased for a few hundreds of thousands of dollars had there been anyone willing to make the speculation. Offerings of large parcels of Mesabi land were made with no takers.

But the iron makers got around the difficulties by putting explosion doors in the tops of their furnaces and

mixing Mesabi with other ores. With this change in practice their troubles were ended.

In the years that have gone since the opening of the range more than $3,000,000,000 worth of ore has been taken from those hills and approximately the same amount remains.

Chapter Fifteen

"I WOULDN'T GIVE A CENT FOR ALL THE IRON IN MINNESOTA"

Not so many years have gone and these passing years have brought paved highways, automobiles, busses, and trucks, airplanes, railroads, electric lights, telephones, radios—all the accessories of a modern civilization to the ranges.

Nowhere in the world, probably, are there small cities so modern as these towns of Hibbing, Eveleth, Tower, and the others. More than one Minnesota community of 1,500 population has a schoolhouse which cost one million dollars to build and equip; wide streets are paved; perhaps no city, anywhere, is so well lighted as Hibbing; buildings are new; fire departments are equipped with as modern apparatus as the best station in New York City; parks are well kept; public buildings are models in architecture; cities are clean.

The iron companies, assessed for perhaps 95 per cent of all taxes pay the way, and where is the community that would not contribute five cents of every needed dollar to modernize itself?

Without the guiding dates it is difficult to believe that considerably less than a lifetime ago settlers who desired to migrate to the Vermillion and Mesabi ranges were required to register and promise to keep boarders so as to insure lodging for men who had no homes. There is the record of the first group of 350 men, women, and children

who traveled from Northern Michigan to the Soudan mine. By train, sleigh, and horseback, camping in the open of winter nights, spending more than a week for a trip that now requires but a few hours to be housed, upon arrival, in twenty-eight new dwellings that had been erected in anticipation of their coming.

"Immediately upon arrival," writes Elisha J. Morcom, "the settlers became busy moving into the houses. When this was done everyone turned to the one objective—to mine iron ore. Blacksmith shops, changehouses and other buildings were built. Old cast iron wash pans and a steel boiler, found at abandoned gold diggings near Pike river, were used to make forges and stoves.

"Mining operations began at once. The Breitung and Stone pits were the first to be developed. Drilling and tramming were done by hand and where the ore could not be wheeled out by man power horses were used to operate the derricks which hoisted the ore out of the pits. This continued all summer and slowly a stockpile accumulated.

"In the meantime, the Duluth & Iron Range Railroad Company was not idle. Beginning early in the summer of 1882, they pushed slowly forward from Two Harbors so that on July 31, 1884, the first railroad was completed to Soudan. That afternoon the first locomotive, with Thomas Owens at the throttle, proudly and slowly puffed into Soudan. It had a load of ten empty ore cars and a coach in which rode the railroad officials and their families.

"All operations at the pits ceased and a half holiday was declared. Everyone celebrated. Even the Indians took part by giving their pow-wow dance. Every person able to do it—men, women and children—helped fill the ten

cars, making a shipment of two hundred and fifty tons of ore, the first shipment of iron ore from the Vermillion or any other range in Minnesota on July 31, 1884.

"In a few months the settlers became accustomed to their new surroundings and things took on a slow, steady progress. People who came after 1884 had to build their own homes. They were clumsy-looking structures, built of rough three-inch plank, dove-tailed together at the corners and held in place by wooden pegs. Supplies were received at the company store. This was only temporary for later, when merchants established themselves, the company abandoned the store leaving the business to the merchants of Tower, not far away. A story has it that one Pete Smith, a Tower butcher, delivered meat with a team of oxen during the summer of 1884. On a certain day the following winter Smith was late with his delivery. He came with horses.

"One of the most-looked-for days was pay-day. The first pay-day at Soudan was an odd one. The miners were paid in cash, the money coming from Duluth. To take up as little space as possible it was carried in the largest possible denominations. Included in this pay-roll were five one thousand dollar bank notes. The problem was solved when five volunteers from the group of miners split up the bank notes into smaller bills."

Owing to a peculiar formation in the Mesabi range operations did not begin in the Eveleth district until after work had been started in the Mountain Iron and Biwabik sections. The first discovery of iron ore on the Mesabi was at Mountain Iron and nothing was done in the greenstone and granite intrusions further away until 1893. But those findings, once they were open, had a history

that reads like all the others—they developed very, very quickly.

"Possibly a description of the equipment which eventually came in on the D. M. & N. grade may be interesting," writes John H. Hearding. "We had to wait until December 1, 1894, until the ground was sufficiently frozen to bring a steam shovel over the track because the line had not been surfaced. To insure a good foundation the movement of the shovel was made at night when it was colder.

"This equipment was considered heavy. The steam shovel weighed thirty-five tons and the two narrow gauge locomotives weighed eleven tons. I notice that in going over old records that we moved, in the first month, 13,000 yards and the second month, 14,000 yards; today, with shovels weighing three hundred and fifty tons, and more, we move as many as 150,000 yards, and more, in a month.

"The winter of 1894-95 was extremely cold. Owing to the slow movement of the stripping the frost penetrated to a great depth and made the operations much more difficult. I remember driving to Virginia and looking at several thermometers, all of which registered sixty to sixty-two below zero. I also remember that at one time a heavy charge of powder turned over a test pit, frozen so solidly and completely that after it fell, fully twenty feet of it lay horizontally in the pit.

"During this particularly cold spell, a small creek, which we had deepened at one point for water for our boiler, froze its entire length of a mile, or so. It became necessary for us to pump out, with pails, all the test pits on the location. They all contained water and, in some places, we had to haul the precious stuff more than a mile.

"During the last of December in 1895 a number of buildings were put up in Eveleth. One of these was used as a hotel. It was built as a store building with rooms upstairs, the front of the store being used as an office. The central part was used as a dining room and the rear part as a kitchen. This arrangement worked for economy as the heat of the kitchen stove modified the temperature clear through to the office and up the stairway to the rooms. It was not so warm, however, that the guests could do without putting on their wraps to come down for their meals.

"In Eveleth there was a boarding house called Childers. On one occasion I met a man who had come over to the camp and asked him why he had left town. 'I can't stand the snap steaks,' he barked.

" 'The snap steaks'?

" 'Yeah.'

" 'What are they?'

" 'A snap steak,' he said, 'is one you cut a piece of, hold one side of it with your teeth, grab the other end with your fingers and pull as hard as you can. Then let go with your fingers and snap it down your throat. It's the only way you can get it down.'

"At the camps we ate a great deal of moose meat. Beef was twenty-two cents a pound and moose meat cost six cents. We had to take all our mail to Virginia by horse. The country was pretty wild and our mining equipment was pretty crude. Picks and shovels and our old steam shovel was repaired so many times that I think there was a new piece of steel for every old one.

"In such places during such times you had to be a good citizen, or move along. The common cause attracted all to each other. If one was attacked the instigator was

subdued by all. We had no police department, no fire department and if sickness came it was a community duty to offer services.

"Men and women were regarded for their personal worth and friends were friends regardless of financial conditions. It was out of such communities that men such as Washington, Jackson and Lincoln came. They faced the dangers, privations and hardships of the frontier and through them gained a resourcefulness, courage, generosity, kindliness and loyalty to their friends and their country the memory of which time can never efface."

Off to the south the Cuyuna range, with its thirty-odd mines—in comparison with approximately three hundred on the Mesabi, ten or twelve on the Vermillion, forty on the Gogebic, one hundred on the Menominee range and another one hundred, and more, on the Marquette—was opened in 1910.

The Cuyuna range is divided into two main divisions, the North and South ranges. The ore is probably of the same geologic age as the ore in the Mesabi because, to some extent, open pit mining operations are effective. Steam shovels, each equipped with 6 to 8-yard dippers that will cut 128 feet wide at the level of the shovel track and with a maximum dumping height of 61 feet above this elevation, are in use.

These shovels rip through the sandy overburden, tearing it in wide strips to expose the ore while steel dump cars of from 20 to 30 cubic yards capacity have replaced the old wooden cars. Compressed air has replaced the hand-dumping methods and huge locomotive cranes are used for shifting tracks.

Instead of spading by hand, as in the days of the Mer-

ritts, 300-ton revolving shovels, operated by electricity, and carrying drag line excavators now gouge out the mineral. Standing on the natural surface the excavators can reach 40 feet down to lift out, in mighty bites, the red metal of industry. In loading the ore from open pit mines railroad cars are run from the yards, down into the pits and alongside the shovels so that no further handling of the ore is necessary until it reaches the docks.

On the Vermillion underground methods are in use while on the Michigan ranges most of the ore is mined underground, although there are places where the ore bodies come close to surface and can be taken out by open pit methods.

Many men whose boots have scruffed over the ranges have become rich; many have been like G. B. Goff, of Saginaw, Mich., who, in a crudely-written letter, tells how close he came:

"In 1882 I done land seeking on the eastern part of the Mesabi Range, and while doing so found indications of iron in a good many places. The next year, instead of looking for land for other people, I decided to look for iron for myself.

"I had only $112 when I started to bear my expenses all summer and knew I would have to camp out for I wouldn't have money enough to stop at hotels much. The first trip I made was up in Cook county of a month, or more, but I didn't find nothing. I was looking for pine timber, as well as iron, as I had an arrangement with Rust & Burrows to give me from 50c to 2 dollars per acre, according to how well the land was timbered.

"I concluded to go further west and went to Grand

Rapids to get my supplies. This was in June, 1883, and the trip took five days and nights to make from Aiken, 175 miles on account of the river being full of logs we could make no time. Grand Rapids then contained 18 saloons, one old log hotel, one little store and as there was over 130 people on the boat, mostly land lookers to look over the 85 townships to be sold at the St. Cloud sales that was to take place in August. The town was pretty well filled with people, so after putting in the night as best I could I went to the store to get my supplies.

"I had a man with me as a helper and we started out with 225 pounds, a terrible big load for 2 small men but it had to be done. I tramped all over the country and found iron in many places where the land had never been surveyed. In the fall I went to Minneapolis and got an option from Mr. Pillsbury for some white pine timber land he owned and agreed to pay him one dol. per M., stumpage land and all. For years afterwards no one thought there was iron there—it was on the Mesabi Range—but I knew and when I got back to my home in Saginaw and showed Burrows & Rust the plats and deeds of the Pillsbury land Mr. Burrows spoke right up and said:

" 'I wouldn't give a cent for all the iron in Minn, and the timber in the country will never be worth anything while we live.'

"He felt indignant to think I had no more judgment than to buy timber and want to buy more so far from market. Then, to cap it all, wanting to buy that land for iron was sheer foolishness. That land is now the Mahoning mine.

"Nothing was done about my findings, and the rebuf I got kind of took the wind out of me for looking for iron, altho I had just as much faith in iron as ever.

"On the 20th of March, 1887, I entered into an agreement with Mr. O. T. Higgins to look for iron for his company, he was to pay me $100 a month and 1/4 of all the iron I found, he to buy all the land and pay all expenses. About the middle of May I started. I looked at all the land through to where Hibbing now stands.

"I have in my possession plats of the land that I selected that season, of 1887, covering that range from Iron Range R. R. to Hibbing and about all the mines now in operation are on land I selected. Mr. Higgins didn't want it but I got $100 a month."

It may be stated that the lands Higgins refused and which Goff recommended are now worth far into the millions.

But riches and fame, or one hundred dollars a month and oblivion, these pioneers who struggled and these men who have carried on the work that was started deserve the recognition that has come to them.

Geologists, following on the heels of the prospectors, confirmed what had been suspected—that the Superior region held the greatest iron deposits known to the world.

The geology of the district, according to *The Iron Ores of Lake Superior* a technical survey published by Crowell & Murray, mining engineers, chemists and metallurgists of Cleveland, is:

"The Lake Superior region is located in Minnesota, Michigan, Wisconsin and Ontario. It covers an area of approximately 181,000 square miles near the headwaters

of three great drainage systems. The largest part of the area is drained by the waters tributary to Lake Superior and Lake Michigan. On the west, a part of the area is drained by the headwaters of the Mississippi river and on the north, a part of the area is drained by the waters flowing into Hudson's Bay.

"The principal topographic feature of the region is the Lake Superior basin. This basin trends in an easterly and westerly direction, and excepting along the southeastern margin is nearly walled in by steep escarpments that rise 400 to 800 feet above the surface of the lake. In the adjacent areas, the principal ridges and valleys trend in a direction parallel to that of the lake. Along the southeastern margin the shore is for the most part flat and the adjacent areas low. The surface of the whole region is mostly covered with varying thickness of glacial drift, and soil that has resulted from the decomposition of the underlying rocks is very seldom found.

"The iron ore districts, or 'ranges' lie at an average elevation of about 1,500 feet above sea level. They occupy a combined area of approximately 3,800 square miles or only about two per cent of the total area of the region. These districts have been studied in great detail, the principal geological subdivisions have been identified and correlated and the structural relations have been carefully worked out. The intervening regions are not so well known, however. The region is a part of the great pre-Cambrian area of northern North America, occupying the southern part thereof. On the south it is overlapped by the Paleozoic rocks of the Mississippi Valley region and on the southwest by rocks of the Cretaceous age.

"The pre-Cambrian rocks are the oldest rocks of the continent and they consist of several series—Kewenawan,

Huronian, Lauretian and Keewatin—all being iron bearing."

Above the iron-bearing rocks in certain areas is located another stratum of younger rocks and from these come copper. In other words, the entire Superior region is an enormous basin of iron, heavily copper plated. Not many years hence and, in Canada, on the north shores of Superior, will be another tremendous iron mining development. The ore is there, waiting for the scoops and trains to bring it to water.

Chapter Sixteen

THE ROCKEFELLER FLEET COMES TO THE LAKES

Up from Cleveland and Buffalo, Detroit and Chicago steamed the carriers, bows nosing into the seas, whirling water churning from under their sterns, holds filled with coal, salt, and flour—on their decks men who stood and stared ahead into the horizon. Down from Duluth they came, in steady procession, smoke rolling from their stacks, decks empty but iron, wheat, and copper filling the depths of their hulls—blunt noses crowding schooners from the paths of commerce.

The dust-covered records of shipping through the St. Mary's river tell the story of 1896:

Steamers, 13,404; other registered craft, 4,391; unregistered craft, 820; net registered tonnage, 17,249,418; passengers, 37,066; coal, 3,023,340 tons; flour, 8,882,858 barrels; wheat, 63,256,463 bushels; grain, other than wheat, 27,448,071 bushels; manufactured and pig iron, 121,872 tons; salt, 35,553 tons; copper, 116,872 tons; iron ore, 7,909,250 tons; lumber, 684,986,000 feet; silver ore and bullion, 240 tons; stone, 17,731 tons; general merchandise, 520,851 tons; total freight, 16,239,061 tons.

Already the Poe locks, 800 feet long, 100 feet wide, and having 22 feet of water on the sills, had been built by the federal government in the years from 1887 to 1896. General Orlando M. Poe was the engineer officer in charge of the district and E. S. Wheeler was his assistant in local charge of construction. The Poe lock had taken

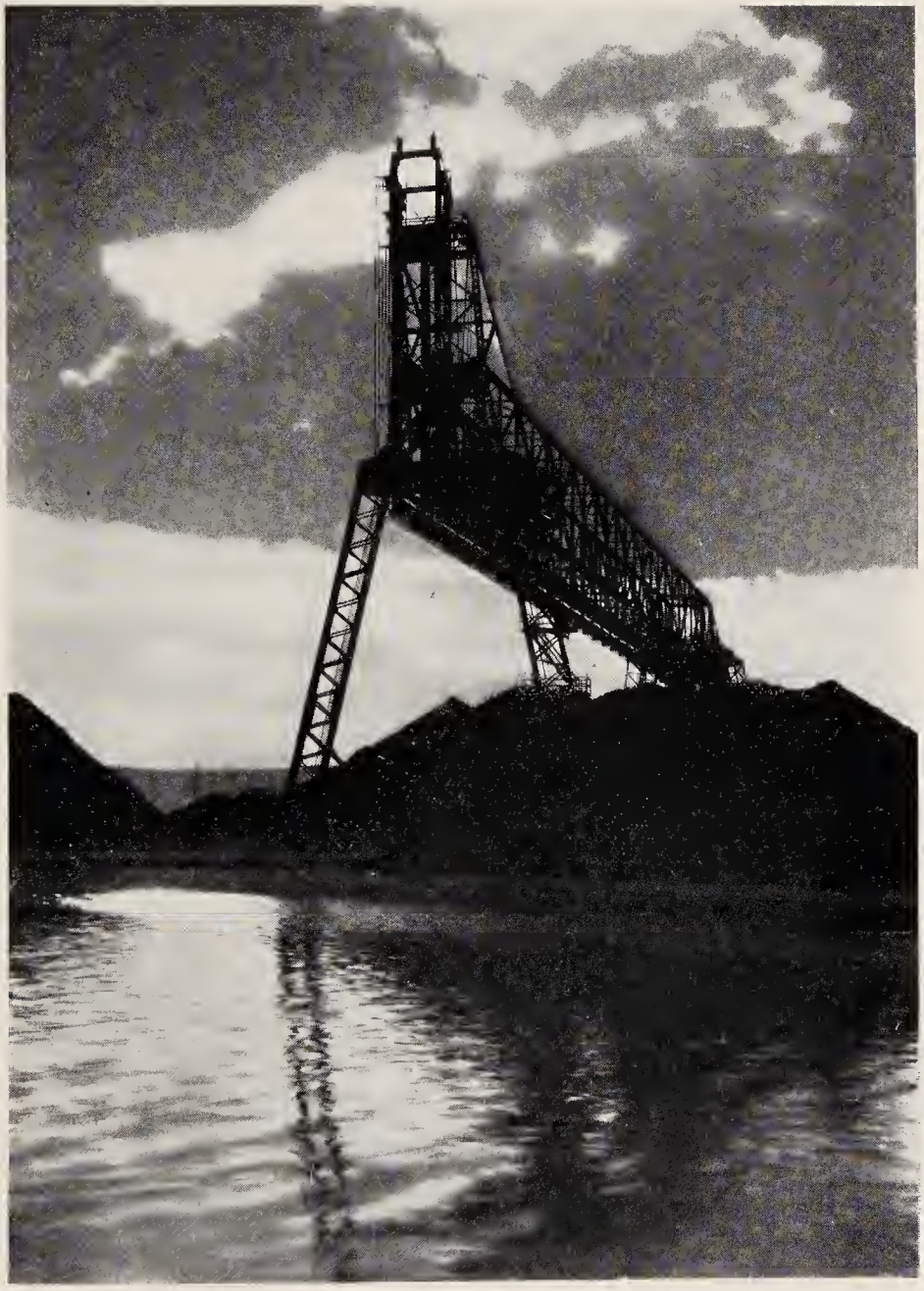
the place of the canal built by Charles Harvey, the salesman of scales, in 1855.

The opening of the Mesabi, Vermillion and Gogebic ranges was making it imperative that still other canals be built at Sault Ste Marie and in 1896, in Detroit, a man who had already spent thirty-four years in serving the Lakes—and who was to give thirty more years before death should quietly overtake him—was receiving felicitations because the completion of the Poe lock brought to an end one of his first great struggles for the development of the waterways.

William Livingstone, born in 1844, had come to Detroit when he was seventeen years old and three years later he was manager of a vessel company. The interests of the company were not in coal for the mines, nor ore for the mills—nothing so romantic as that. Putting out from Detroit its ships only hung against the flanks of the ore carriers as far as the St. Clair river where they turned and went to the shore to load cordwood. If nothing else, William Livingstone had much to do with keeping a city warm. But there were so many other things:

There are men who, even in their early days, may be singled out for great usefulness. Livingstone was one of them. In youth he was showing the abilities that, later, were to bring him success in such diversified interests as newspapers, banks, shipping, politics, and, along the way, he was to have much to do with the beginnings, loosely speaking, of the Ford Motor Company, for, as a banker in 1907, he loaned Henry Ford and James Couzens the money to buy out several original stockholders.

His abilities as a politician—and "politician" is used only to designate one whose mind can influence other



Berwind Coal Docks at Superior, Wisconsin

Photograph by Margaret Bourke White
Permission of Fortune *magazine*

men to see as he sees and do as he wants them to do—had been greatly instrumental in bringing a lazily indifferent Congress to a realization of the importance of doing what it could that the flow of progress might not be clogged in these great arteries of trade.

Livingstone was to be listened to, again and again, for his mind was always wrapping itself around the problems of shipping. Some twenty-five years before the completion of the Poe lock, the first steamers designed exclusively for the ore trade had been built by Peck & Masters, in Cleveland. There were two, the *R. J. Hackett,* 1,200 tons, and the *Forst City,* 1,300 tons. They were the first steamers to have continuous hatches, spaced 24-foot centers, and with machinery aft.

In 1882 the *Onoko* was built by the Globe Iron Works, in Cleveland, and was the first iron steamer for the ore trade. She was 287 feet long, 28 feet wide, and those who built her predicted ore ships would remain that size because loading and unloading would be too costly to permit anything larger. Livingstone thought otherwise, and was predicting the approach of heavier vessels and deeper channels. They were many who said he was predicting too much. They were to learn.

The launching of the *Onoko* brought in the iron carrier. The business of building ships became what James Davidson, in Bay City, had started—a steady business. A steady business for nearly a dozen years. As happens in all businesses, there came a lull. In the midst of it and while shipbuilders were studying their books and keeping operating costs within convenient reach, letters were delivered to five different companies. Reading them the shipbuilders saw the signature of "H. G. Dalton."

What happened then is precisely what would happen

anywhere in a period of inactivity. Five shipbuilders sharpened pencils and sat down to figure. All knew that, a few years before, Henry G. Dalton had become a partner in the firm of Pickands, Mather & Co. All were familiar with the rapidly increasing importance of the company.

Surely, each had a record showing that the Cleveland concern had added to its responsibilities by acquiring the management, or ownership, of eight different dock companies, four mining companies, two barge companies, and two steamship companies. That one steamship company —the Interlake—operated two vessels and the other—Minnesota Steamship Company—owned nine steamers and one barge and that the American Steel Barge Company owned seven steamers and twenty barges.

Perhaps it would be better if one of those who opened a letter from Mr. Dalton told the remainder of the story and its surprising disclosure:

"Alexander McVittie had taken over the presidency of the Detroit Drydock Company which had been founded by Frank E. Kirby and his father," recalled Merton E. Farr who, later, was to make a large contribution to the history of the Lakes. "He received Mr. Dalton's letter and brought it to me, as cashier of the company.

"We worked out the bids and mailed them. No one in the office thought we had a chance for the business because our price was pretty high. That is, higher than some other concerns we knew would be in competition. The morning came when Mr. McVittie sat with four other shipbuilders in the office of Pickands, Mather & Co., in Cleveland. One by one they were called in and each was given a contract signed:

" 'J. D. Rockefeller.'

"We didn't understand it at the time. A little while later we came to know. Mr. Rockefeller, calling on Cleveland friends had letters written to five shipyards—each letter asking for a bid on two ships. Five shipyards made bids and most of them cut costs to the narrow margin. Five shipbuilding companies received contracts for two ships each, making a total of ten vessels, the price in each case being accepted without quibbling. The Rockefeller fleet of ore boats was on the Lakes.

In New York the financier chuckled quietly as he went about his daily tasks involving millions, for he had intended, from the beginning, to give each company a two-ship contract and with the help of Mr. Dalton had delivered a business stroke that had the hidden touch of genius. He had set five firms bidding against each other and had kept down the costs. The Lakes were to know more of that little man who had spent many of his early years in Cleveland. Just as they were to know more of Harry G. Dalton.

But John D. Rockefeller did not chuckle alone. In Cleveland M. A. Bradley, who had succeeded to his father's business, was laughing quietly to himself. Following his father's practice Mr. Bradley had set freight rates for ore on his own ships. They were somewhat larger than the Rockefeller interests had been accustomed to paying and there had been a dispute. But the Bradley fleet, in a strategic position because it was needed, got the cargoes.

With the completion of his own ships Mr. Rockefeller sent one of his executives with this stiff message:

"Mr. Rockefeller requests me to inform you, Mr. Brad-

ley, that never again will such a situation arise and that he will not forget your increase in rates."

"Kindly tell Mr. Rockefeller that I do not anticipate another such situation," replied Mr. Bradley. "Furthermore, tell him I appreciated the opportunity it afforded."

Mr. Rockefeller did not know that when Captain Alva Bradley died he had stipulated in his will that the executors of his estate should invest the profits of his shipping interests in downtown real estate in Cleveland and that as time went on the fleet would pass out of existence almost of its own accord.

Far-seeing Captain Bradley had visioned the time when business property in the City of Cleveland would be more valuable and less hazardous, perhaps, than boats on the Lakes. A day, or two, before he died and with this plan in mind he had written his son:

"Cleveland, Nov. 16, 1885.

"Mr. M. A. Bradley,

"Dear Sir:

"I am not feeling very well this morning. Think I will not come down this forenoon. Wish you would come up here to dinner so we can talk over matters.

"Alva Bradley."

A peculiarly formal letter, you say, to send to an only son. Not at all. Between this father and son there were ties as strong as ever can be between such but M. A. Bradley was young—only twenty-five years old—and was taking over the burden of a $3,000,000 estate. His father, even in his last letter, was trying to deliver a message in business language—and a formula for his son to follow.

The Lakes were to know more of M. A. Bradley, just as they were to know a Scotsman down in Pittsburgh from where Andrew Carnegie was watching the giant, called Iron, roll uneasily in its bed of centuries while men pecked away with blasts of powder and steam shovels.

Where other men saw enormous opportunities Carnegie, with all his canniness, saw little—he came to the Lakes against his will.

The coming was brought about in this fashion:

In 1892 a rumor went through the East that John D. Rockefeller was making large investments in the Minnesota ranges. The rumor came to the attention of Henry Clay Frick, partner to Carnegie, and Frick, in his investigations, became better acquainted with Henry W. Oliver, who manufactured plows and shovels in Pittsburgh. Oliver had recently formed the Oliver Iron Mining Company and was operating on the Mesabi range.

During the course of their conversations Frick observed:

"In one important respect, our interests are alike—each wants assurance of an adequate supply of good ore."

"That is true," agreed Oliver.

"Why not sell the Carnegie company an interest in your ore properties?"

"Well, I might," thoughtfully answered Oliver, and negotiations were under way. They led into an agreement under which the Carnegie company was to obtain one-half of the stock in the mining company in return for a mortgage loan of $500,000 which was to be used for development purposes and, if advisable, the acquisition of more mining lands.

Elated over his bargain Frick hurried to Carnegie but

the Scotsman was in a dour mood. He listened but objected:

"Oliver's ore bargain is just like him—nothing to it. If there is any department of business which offers no inducement it is ore."

Two strong men—Frick and Carnegie—quarreled, at length, over the agreement. Frick insisted it be kept; Carnegie was equally insistant upon an abrogation. Frick prevailed and Carnegie, writing to his partner on March 16, 1894, grudgingly consented:

"Oliver hasn't much of a bargain in his Mesabi, as I see it, but in view of threatened combination it is good policy to take the half as independent of its intrinsic value; it gives us a wedge that can be driven in somewhere to our advantage in the general wind up. In less strong hands, the Oliver would be squeezed. Remember 'Reckafellows & Porter' will own the R. R. and that's like owning the pipe lines. Producers will not have much of a show. We are big enough to take care of ourselves and, if forced, could make another outlet somehow.

"Taking half with Oliver means we have all the risk, must furnish all the capital—not a small amount, etc., etc.; besides Oliver isn't a good manager and mining needs just that thing. It's a pity we have to go in at all, still I cannot but recognize we are right and flanking the combination as far as possible. There are no doubt others in Oliver's position who will offer to do as he has, with us. I don't think Standard people will succeed in making ore a monopoly like oil, they have failed in every new venture and Rockefeller's reputation now is one of the poorest investors in the world."

Two weeks later Carnegie again wrote to Frick that he "would not be sorry if you miss one-half of Oliver mines" and, on April 18, 1894, he made his position more open by sending a formal communication to the board of managers of the Carnegie company:

"You will find that this ore venture, like all other ventures in ore, will result in much trouble and less profit than almost any other branch of our business. If any of our brilliant and talented young partners have more time, or attention, than is required for their present duties, they will find sources of much greater profit right at home. I hope you will make a note of this prophecy."

Carnegie resumed his blocking tactics and though nearly 2,000,000 tons of ore were taken from the Mesabi in 1894 the Oliver company contributed very little to this total. For two years the internal strife prevailed and then Frick went to the Rockefeller interests and proposed leasing the properties for fifty years on a royalty basis of 25 cents a ton instead of the prevailing rate of 65 cents a ton. He asked for a guaranteed output of 600,000 tons, yearly, and also an understanding that the railroad and the ships controlled by Rockefeller would transport the ore to Lake Erie ports for $1.45 a ton.

It was Frick's turn to smile. Carnegie, with the proposals before him, scented huge profits and, for the first time, became interested. Tremendously interested. He recognized Oliver was entitled to serious consideration for his share in the enterprise and at once began trading with this result in Carnegie's own figures:

"Oliver Mining Company made, say, $400,000.

"Now he says 1/2–$200,000.

Now he got half

his cost of $120,000– 60,000

"He wants his $260,000 2, 3, 4, 5 years with interest—for this he sells us 2/6ths making us 5/6ths.

"He asked $120,000 but when I showed him he had given us $60,000 1/2 of that was 'gone.' He agreed. He wanted 1, 2, 3, 4, 5 years. I said we would not pay anything shorter than 2 years. No doubt the interest sold will net this before it is due.

"2/6 of $400,000 is $133,333.

To begin with—then we have only to pay $133,333.

"One year like last would pay it entire."

Carnegie's expectancy came true. The following year did pay off the obligation. The Carnegie company had five-sixths of the mining property, at a cost of practically nothing.

But, in spite of that extremely profitable transaction, Carnegie continued to be pessimistic over the future of the ore mines. In 1897 when the Rockefeller interests made a general reduction in royalties from 65 to 25 cents a ton many stockholders in iron mining companies threw their shares on the market for what they would bring. Frick and Oliver began buying options on all offered stock in three different companies and gaining "control." Frick went to Scotland.

Carnegie received him but refused to consent to the plan Frick had submitted. Again the two men quarreled. Frick, sensing defeat, switched tactics and began pleading—pleading and reasoning with the ironmaster. Carnegie weakened sufficiently to give his consent to abide by a decision of the board of managers of the company.

To the managers was submitted a cablegram Oliver had sent to Carnegie.

"I am distressed at indications here that Norrie options expiring on Monday, are to be refused. It would be a terrible mistake. The good times make it that I could not possibly secure these options again at fifty percent, advance. The Norrie mine controls the whole situation. They have sold over one million tons this year. With the additional property we will get from the fee owners, we secure fifteen to twenty million tons of ore that the Carnegie Company are purchasing this year five hundred and fifty thousand tons. I will guarantee, Counting the surplus they have in their treasury, to return in profits every dollar we invest in two years. Do not allow my hard summer's work to go for naught."

The board of managers accepted Frick's advice.

Carnegie was won over to the Lakes.

By a narrow margin of a few days he gained control of mines and but for the exercising of the options the present position of the United States Steel Corporation (which succeeded the Carnegie company, in later years) might have been quite negligible in the industrial affairs of a nation.

Assured of raw material in abundance the Carnegie company purchased an almost defunct railroad called the Pittsburgh, Shenango & Lake Erie, thus gaining transportation facilities from the water to Pittsburgh. It now had a direct route to its mines but was under the thumb, so to speak, of Rockefeller because the latter's ships were transporting the ore. Frick set about to remedy that weakness. With the help of his friend Oliver six steamships were purchased for the Oliver Mining Company. This

done, a new subsidiary was organized and they called it the Pittsburgh Steamship Company. From beginnings of six vessels it was to grow into the largest fleet on the Lakes—more than 100 vessels.

Carnegie was happy, now.

He considered his position impregnable—that he could challenge any and all, when he chose. He chose to challenge in 1900 and he selected as his foe—John D. Rockefeller.

Chapter Seventeen

ANDREW CARNEGIE LOSES A DECISION

THE decision between Mr. Rockefeller and Mr. Carnegie was to go to the one who could command the waterways.

As has been shown, shipbuilding on the Lakes had been an indiscriminative business up to the time Captain James Davidson had built his yards in Bay City. Then, for a number of years, the growth in tonnage had been steady, but cautious.

For illustration:

Up to 1884, when the first 16-foot channel was projected through the Lakes, the tonnage varied from 600 to 1,000 tons, net register, with a carrying capacity of about twice the registered tonnage. But when the deeper channel became available the tonnage grew, almost overnight, it seemed, from 1,000 to 1,900 tons, net register, with a carrying capacity about double that. A marked increase in size was shown in steam vessels.

It has been the history of lake practice that an improvement was no sooner completed that it was found to be inadequate to the needs of the commerce. The 16-foot channel was scarcely open when it was realized it could not take care of the shipping. Steps were taken, immediately, for the deepening to 20 feet, and beyond. The Poe locks were opened at Sault Ste Marie in 1896 and the influence of this canal finds its significance in the record

that more than half of the tonnage of bulk freighters built in 1896 exceeded 2,000 tons, net register.

Six years before not a single vessel of this tonnage was in service and the mean dimensions of lake freighters, even as late as 1894, were under 300 feet. But during the six years from 1888 until 1894 the ore trade continually demanded larger ships. In 1895 the first of the 400-footers appeared. This was the *Victory.* In 1897 Mr. Rockefeller, whose investments in the Minnesota iron fields were steadily widening, gave orders through the Bessemer Steamship Company for a dozen vessels, exceeding all previous dimensions, the largest being 475 feet long.

In the mines, in the mills, and on the docks Time became the factor.

No longer could cargoes be entrusted to the uncertainty of the winds. Size—in other words, carrying capacity—became the difference between profit and loss. Schooners, with their network of rigging and spars and with a corresponding decrease in carrying capacity, went out; the long, snub-nosed freighter, designed for heavy burden and with its wide hatches for quick unloading, and loading, came in.

The day of sails, as a means for propulsion, was over.

The installation of the Hulett unloader, in 1899, worked a further revolution in lake practice. No longer need loading and unloading be handled by men with their feeble shovels and the dinky engine. A car-dumping device was put in practice and the Hulett grab bucket was made available on the docks at all the lower lake terminals. Instead of spending one, two, and three days in port the time was shortened to one, two, and three hours.

There, to explain, is one of the great differences between lake and ocean shipping.

Where an ocean freighter may take from ten days to three or four weeks in making a trip, time spent in port is of minor importance when compared with what is demanded in lake shipping. From Buffalo, Conneaut, Cleveland or Lorain, on Lake Erie, approximately, three days are all that are needed to steam the ship to Duluth, at the head of Superior. It is essential, if there is to be dispatch in handling, that time be not wasted. The incident of the lake captain who had to wait three months for a haircut, and another two months before he could get his shoes half-soled, is something less than an incident—it is a commonplace.

With speed in loading and unloading guaranteed the Rockefeller and Carnegie interests began additional preparations for the approaching conflict. Respectively, their fleets—the Bessemer Steamship Company and the Pittsburgh Steamship Company—were placing orders in the various shipyards but Rockefeller had taken the longer step . . . he had purchased an interest in the American Ship Building Company.

This concern was a combination of the interests and working facilities of eight different companies, with yards in half a dozen lake cities and to understand the importance of later developments—not only in the Rockefeller-Carnegie feud but developments of the World War—requires a working knowledge of the various units.

For several years prior to 1899 a man had been waiting and watching—waiting for shipbuilding really to develop and watching for the proper time to submit a proposal to the various interests. He was not a shipbuilder, a mine operator, nor a captain—he was an attorney. As a

member of the firm of Hoyt, Dustin & Kelley, James Humphrey Hoyt had become legal representative in the handling of the Rockefeller fleet and, as a further indication of his deftness, he had also founded the Pittsburgh Steamship Company for Andrew Carnegie.

Bluff, skillful, and a rare raconteur James H. Hoyt kept ends from meeting where a diplomatic but a less diplomatic person would have been engulfed in mistrust and intrigue. In addition to representing those named he was also retained by another powerful group—the Pickands-Mather interests—while in New York his brother, Colgate Hoyt, had connections that were wide and deep and which also included the Rockefellers. In Superior, Wis., there was a shipbuilding company that now was controlled by the Rockefellers and Alexander McDougall but which had been inspired, and financed, by Colgate Hoyt.

Familiar with shippers and shipping interests James H. Hoyt, from his Cleveland offices, could look out across Lake Erie to visualize all the shipyards on these Lakes and to squirm, a little, inwardly over waste in management and duplication in interests.

In Chicago there was the Chicago Shipbuilding Company, organized in 1889 with a capital of $350,000 and these stockholders: J. H. Chandler, Luther Allen, W. I. Babcock, Robert Spence, Robert D. McFadon, Charles P. Coffin, William A. Gardner, H. M. Hanna, M. A. Hanna, L. C. Hanna, J. F. Pankhurst, A. C. Saunders, Robert Forsythe, and W. L. Brown.

The first vessels built in the yards were for the Minnesota Steamship Company and in 1892 the list of stockholders was increased to include: Samuel Mather, H. H. Brown, James Pickands, Jay C. Morse, and C. W. Pot-

ter. The following year the name of Marshall Field, the Chicago merchant, was added.

In Superior, Wis., there was the shipbuilding company controlled by the Rockefellers and Alexander McDougall. In Milwaukee, the Milwaukee Dry Dock Company had been organized out of two other companies—the Wolf and Davidson Drydock Company and the Milwaukee Shipyard Company—with this list of stockholders: William F. Fitzgerald, George C. Markham, A. M. Joys, Fred C. Starke, H. A. Luedke, and W. M. Fitzgerald.

In Detroit the Detroit Ship Building Company was a consolidation of four companies—the Detroit Dry Dock Company, Clark Dry Dock Company, Dry Dock Engine Works, and the Detroit Sheet Metal & Brass Works. The company had two plants, one at Wyandotte and one in Detroit. The Detroit yard comprised one of the largest—if not the largest—and most complete shipbuilding plants on the Lakes and the company was capitalized for $1,428,000 and had among its stockholders: Senator James McMillan, William C. McMillan, Hugh McMillan, James H. McMillan, Gilbert N. McMillan, Alexander McVittie, and Frank E. Kirby.

In Cleveland there was the Globe Iron Works and the Ship Owners' Dry Dock Company and it was in the yards of the Globe Company that the first iron carrier for ore—the *Onoko*—was built. Also, in Cleveland, was the Cleveland Ship Building Company, organized in 1886 by Robert Wallace, H. D. Coffinberry, J. H. Wade, and General Garretson. These men had been officials and stockholders in the Globe Company but, selling their interests, had formed the new concern with a capitalization of $1,000,000.

With influential men of money in each company it was

not easy for Mr. Hoyt to get their attention to a subject of consolidation. Their general attitude is pretty well expressed by a letter to W. H. Gerhauser, now president of the American Ship Building Company, from O. J. Fish who, for many years, was an officer in the Globe Iron Works Company and, after the merger, an executive in the American Ship Building Company.

Mr. Fish recalls:

"There were many of the Globe stockholders who were averse to exchanging their stock for that in the American Ship Building Company. It was finally decided to do so inasmuch as the industry had afforded the development of shipbuilding plants at several lake ports and wiser visualists could foresee that the time was ripe to lessen the overhead by centralizing the executive control and eliminating the expense of so many organizations.

"The leading customers of the company embraced the Hanna interests, Northern Steamship Company, the Lehigh Valley Transportation Co. These companies gave our company practically all their construction and repair work. The late Jas. J. Hill, of the Great Northern Railroad, was a familiar figure around the plant. In addition, the company never had any trouble getting a fair share of the construction and repairs from such interests as Pickands-Mather, Gilchrist Transportation Co., Bessemer Steam Ship Company and other well known interests.

"But, as I said before, there was a difference in opinion as to the wisdom of the different stockholders exchanging their stock for that of the American Ship Building Company. There had never been a time when the annual dividends were not paid and in March, 1899, the prospects for business were unusually good.

"The inventory of the plants was fully worth the par

GRAIN ELEVATORS AT DULUTH

Photograph by Margaret Bourke White
Permission of Fortune *magazine*

value of the preferred stock. Personally, I am of the opinion that considering the strategic location of the Cleveland plants, along with their other advantages including real estate not obtainable excepting at prohibitive prices, the American Ship Building Company would have been justified in paying much more for this plant than it did."

But Mr. Hoyt, with his course set in one direction and his mind filled with the economies in what he was planning, refused to be beaten. Those who opposed him, and there were many, might argue but in so doing they always lost a little of their confidence in their defenses. Loose ends gradually came together. Business knots became tied. First one—then another . . . then another, until the package was ready. It was the American Ship Building Company, a $15,000,000 consolidation, which was very large for its day.

And not too soon was the job finished, for the far-seeing John D. Rockefeller, in New York.

For, already, in Pittsburgh, Andrew Carnegie was scrutinizing transportation costs on the Lakes and figuring ways and means for reducing them. He set about cutting close corners with his own fleet and in 1900 delivered an ultimatum to the management of the Rockefeller vessels.

In effect it was:

"Cut your rates to agree with the figures I am enclosing."

The scale which Carnegie stipulated was about half the regular rate and was quite unfair. The Rockefeller interests were charging no more than other carriers and Carnegie in whipping these interests around a post was snubbing all the others in the same loop. When they de-

murred the Pittsburgh Scotsman overreached himself in advising:

"Better accept."

The Rockefellers chose otherwise. From New York flashed telegraphic messages to agents and captains. From Duluth to Conneaut wisps of smoke drifted from stacks while ships of the Bessemer fleet, in answer to the messages, rode at anchor, where they were and awaited the outcome. In shipyards along the Lakes letters were being opened, soliciting bids on building ships for the Pittsburgh Steam Ship Company and the decision of moment rested on what the American Ship Building Company, with its many plants and its great facilities, would do.

Executives of the company, realizing the importance of the Carnegie request, called a meeting of stockholders. The question was put to all—openly:

"Shall we bid for ships to the built for Mr. Carnegie with the knowledge that the present disturbance is not of our making and, also, with the added knowledge that Mr. Rockefeller is a large stockholder in our company?"

The vote was taken. It was:

"No."

In fairness to Mr. Rockefeller it can be stated that, in no way, did he control that vote, nor the ballots of the stockholders.

News of the decision went to Pittsburgh, and Carnegie, needing immediate ore for his mills more than he needed future vessels, tore up his ultimatum and paid the general rate. In defeat he gained an even greater appreciation of the necessity for time-saving in lake traffic. The matter is so important that it cannot be dismissed by the paragraph assigned to it a few pages back.

The smelting of ore is a continuous process through

twelve months in the year while lake shipping is confined to eight months. It is imperative that an ore boat make as many trips as possible and a delay of a few hours not only represents a definite monetary loss to the shipowner but repeated delays may result in fires being pulled from under furnaces because of inadequate supplies.

These boats are operated on as exacting schedules as limited trains and they must keep to their schedules if they are to win their allotted places at the docks. The ore docks, in themselves, represent huge investments and cannot be idle. Because of their facilities they are totally unlike what docks are expected to be. Everything about an ore dock is big and heavy. Frequently a single dock will extend for nearly half a mile, with a depth of half that distance. There must be room for the unloaders. There must be room for storage bins. There must be space for intricate machinery and the dock, itself, must be constructed so as to withstand the shock of contact with a freighter clumsily handled, as, at times, happens.

Just a rubbing touch from one of these 12,000-ton ships would be sufficient to bring down, in complete collapse, an average brick building. There have been times, on these Lakes, when a freighter has nudged bridge abutments and the bridge has been out of commission for days. In ore dock construction there is necessity for heavy foundations and because of the poor bearing quality of river banks it is essential for much of the covered area to be supported upon piles driven deep into the muck.

From a distance the unloading machinery on these docks bulks against the sky and little imagination is needed to liken it to a prehistoric animal crouching to leap into a neolithic swamp. Coming closer crane necks

are seen to hold huge buckets, some of them capable of lifting seventeen tons with a single closing of massive jaws. A ship slides into port and metal feet clank as they stride towards open hatchways. There comes a sinking of iron teeth, a quick bite and tons of loose metal are lifted by dripping jaws to be carried back and hidden against the time when there will be no feast—the mechanical monster again strides forward. The illusion remains.

Side by side, a battery of these unloaders can—and do—clean out a 12,000-ton ship in a few hours. In other times weeks would have been needed to finish such a job. The cost would have been 50 cents a ton in comparison with a present cost of less than 8 cents a ton to the car.

Credit for starting this tremendous development, with its far-reaching effects, belongs to Alexander E. Brown, a son of that pioneer who came to the Lakes because he was tired of selling cottons and woolens, ribbons and threads in a wholesale dry goods store in Pittsburgh.

Like his father, and his brother, Harvey H., Alexander Brown had little interest in life which did not pertain to the Lakes. Of a mechanical turn of mind he found fault with the tediousness and waste in unloading methods and frequently complained to his father:

"I can build a better unloader than any we now have without half trying."

"Quit talking about it and do it," advised the elder Brown.

Alexander Brown went to his drawing board, worked out an idea and had it built in the form of an ore bridge. It was a vast improvement over the crude facilities in use and laid the foundation for the business of the Brown Hoisting Machinery Company.

George Hulett was another who perfected an original unloading device and in so doing was aided by his son, Frank E. Hulett. The elder Hulett was not an engineer but his son, recently out of college, supplied the necessary technical knowledge. There were others, such as Mason, who invented the self-filling bucket, or clam shell, which soon became an integral part of unloading devices.

To the casual eye unloaders look pretty much alike. A rigid, steel, boxlike frame, with legs fore and aft and which span several railroad tracks—underneath the box frame an ore bin which is directly above the car tracks—a long boom from which is suspended a bucket for reaching down into the hold of the ship. The machinery is entirely automatic and travels on tracks to the exact spot necessary to drop through the open hatches.

It is difficult for those unfamiliar with lake shipping to realize the speed with which cargoes are loaded and unloaded. The record is held by the steamer *D. G. Kerr,* the loading dock at Two Harbors, Minn., and the unloading dock at Conneaut, Ohio. It was made on September 7, 1921.

The ship arrived at the dock at 4:43½ P.M.—began loading immediately, and was ready for departure at exactly five o'clock. The total loading time was 16½ minutes. The cargo was iron ore. The load was 12,507 tons.

Arriving in Conneaut the boat discharged her load in three hours and five minutes.

Of course, there have been better unloading records than made by the *Kerr.* Her record applies strictly to loading and unloading the same ship. On May 5, 1927, the steamer *James A. Farrell* unloaded 10,658 gross tons of iron ore in two hours and thirty minutes while on June 27, 1927, the steamer *William A. McGonagle* unloaded

11,445 gross tons of ore in two hours and twenty minutes. Both these records, like the one made by the *D. G. Kerr*, are held by the Pittsburgh & Conneaut Dock Company.

There are many others, but these will serve to show the facility with which iron ore is handled.

Chapter Eighteen

"I COME FROM THE WHEAT BIN OF THE NATION"

THERE are two monuments in the Marquette district that should remain there forever. One is a simple stone, marking the spot where P. M. Everett, of Jackson, Mich., built his crude forge on Carp river to smelt iron; the inscription on it reads:

"This monument was erected in October, 1904, by the Jackson Iron Company to mark the spot where the first Forge on Lake Superior was built by the Jackson Mining Company."

The other monument is a pyramidal cluster of rocks in Negaunee and on it is told:

"This monument was erected by the Jackson Mining Company in October, 1904, to mark the first discovery of Iron Ore in the Lake Superior region. The exact spot is 300 feet northeasterly from this monument to an iron post. The ore was first found under the roots of a fallen pine tree, in June, 1845, by Marji Gesick, a Chief of the Chippewa Tribe of Indians. The land was secured by a mining 'permit' and the property subsequently developed by the Jackson Mining Company, organized July 23, 1845."

From five thousand years ago when ancient Egyptians buried a sickle along with their other treasures in the base of a Sphinx, near Karnac, civilization has moved forward with the use of iron. Some of the story of the Jackson Mining Company has been told and it is pleasing to know that within the executive ranks of the Cleveland-Cliffs Iron Company—now owner of the property—there is one whose interest in sentimental things impelled him to mark the locations of the beginnings of this enormous contribution to American life.

You have met this man's father, and his half-brother; now, you may meet him—William G. Mather. In 1879 he began work as a clerk in the office of the Cleveland Iron Mining Company. His father, Samuel Livingston Mather, was president of the company but that did not mean William G. Mather could do anything other than earn his keep. As often happens under such circumstances, he had to work a little harder to meet what was expected of him.

Under his father's direction control of the Iron-Cliffs Company, in which Samuel L. Tilden and William B. Ogden were the principal stockholders, was bought and in consolidation the firm became known as the Cleveland-Cliffs Iron Company. After the death of his father, William G. Mather succeeded to the presidency in 1891 and under his guidance the company entered into railroad construction in conjunction with the Pittsburgh & Lake Angeline Iron Company building, in 1895, the Lake Superior & Ishpeming Railway.

At almost the same time another, whose offices in Cleveland were in the same building and directly across the corridor from Pickands, Mather & Co., was taking strides, on snowshoes, across Michigan's Upper Peninsula in

search of a right-of-way for a railroad and a site for a city. Fayette Brown was his name and he built the transportation company, as well as the town, calling one the Munising Railroad and the other Munising.

William G. Mather heard of Mr. Brown's activities and, curiosity aroused, went to Munising. First he was attracted by the beauty of location and then by the economic possibilities. Returning to his directors he recommended purchase. In 1900 the Cleveland-Cliffs Company completed the deal and, in addition, acquired 80,000 acres of timber land on Grand Island, near by. With that acquisition the oldest iron company in the Superior region began reaching for properties other than along the Marquette range.

In Cleveland, and along the Lakes, at the turning of the century people were keenly interested in the widening activities of these two sons of the same father. Pickands, Mather & Co., in which Samuel Mather was a partner, had increased its already large holdings by organizing three more mining companies—Corsica Iron Company, Hobart Iron Company, and Chandler Iron Company, in addition to purchasing an interest in the Odanah Iron Company. In the same year of 1900 it also sold its interest in the Minnesota Iron Company, in which it had invested in 1887, and the Minnesota Steamship Company, which it had formed in 1890, to a new organization which was to be announced the following year.

It was a new organization to take over the Carnegie properties. Its capital was to be $1,100,000,000. In its directorate was to be Samuel Mather. It was the United States Steel Corporation.

Nearly everyone could now see what, a little while before, only a few could vision ——

The iron ridge of Superior formed the high ridge of the country's prosperity.

Four years before the records of the canal at Sault Ste Marie had shown a total tonnage of 16,239,061; in 1900 they were showing a total of 25,643,073 tons, with these divisions:

Steamers, 14,436; other registered craft, 4,004; unregistered craft, 1,022; net registered tonnage, 22,315,834; passengers, 58,555; coal, 4,486,977 tons; flour, 6,760,688 barrels; wheat, 40,489,302 bushels; grain, other than wheat, 16,174,650 bushels; manufactured and pig iron, 135,585 tons; salt, 49,259 tons; copper, 131,066 tons; iron ore, 16,443,568 tons; lumber, 909,651,000 feet; silver ore and bullion, 110 tons; stone, 48,902 tons; general merchandise, 541,397 tons; total freight, 25,643,073 tons.

Three years later the figures became:

Steamers, 14,027; other registered craft, 3,569; unregistered craft, 1,000; net registered tonnage, 27,736,444; passengers, 55,175; coal, 6,937,633 tons; flour, 7,093,380 barrels; wheat, 61,384,552 bushels; grain, other than wheat, 32,095,646 bushels; manufactured and pig iron, 193,267 tons; salt, 67,233 tons; copper, 112,877 tons; iron ore, 21,654,898 tons; lumber, 1,003,192,000 feet; silver and ore bullion (none); stone, 21,300 tons; general merchandise, 659,839 tons; total, 34,674,437 tons.

An interesting transition was beginning to take place in this year. Ships were fewer in their passages through the canal but the larger bulk freighter was coming in.

Among those ships were those managed, or owned, by Harvey H. Brown, a brother to Alexander Brown who had done so much to facilitate the loading and unloading of vessels, and who was to do much more. As a young man Harvey Brown had been rather a disappointment to

his father. Fayette Brown, with his pioneering spirit, could not understand this lad and was annoyed because people were saying "Harvey Brown is off playing baseball." Baseball, in those days, was quite dissimilar from the game today. Not the playing, of course, but the following and those who played it. Perhaps, had Fayette Brown thought of it, he would have been less worried—the same pioneering spirit that had compelled him to go to the Marquette district in the early days was no different from the motive of his son in playing a pioneering game of baseball.

However, Harvey H. Brown came to the Lakes and to the ships. He became an agent for several iron companies and then bought an interest with Captain E. M. Peck, in the Northwestern Transportation Company, which operated a fleet of wooden vessels. Then came the desire to build a ship. Only one name suggested itself for the vessel and that was the name of his father. He wanted it modern and he read, with interest, all that was being written on the building of iron vessels. He conferred with shipbuilders. They shook their heads.

"No," they said. "Iron is all right for the sides of ships but for the bottoms—wood."

"Why?"

"Well, Mr. Brown, there's a lot of sharp and heavy rocks in these rivers and lakes. You know, as well as we do, that ships often hit bottom and when this happens these iron hulls they are talking about will be punctured so they'll leak like sieves. Put a wooden bottom in the ship you are planning and you wont have any trouble."

The *Fayette Brown* became one of the first of the com-

posite vessels on the Lakes—flanks of steel and a timbered bottom.

To take care of increasing business Mr. Brown was compelled to charter boats, other than his own. His room was one of the unusual sights of the vessel offices in Cleveland. Across one side he had a board on which were the names of the ships, and various ports. Wireless telegraphy was still in an experimental stage but Mr. Brown knew to the fraction of a mile the speed of each boat and every morning, before his arrival, members of the office force moved the pegs along the map so as to conform with the anticipated ship's log of the day.

By sitting at his desk and glancing up Mr. Brown could tell where each ship was scheduled to be and by means of other pegs he could tell their cargoes—red for ore, black for coal, white for no cargo, and the word "grain" spelled across the heads of others. He could calculate, to the hour, when each ship should reach its destination and if a few hours went by without a message telegrams flashed over the Lakes until the missing vessel was located and the reason for delay reported.

Sending down those vessels from Duluth was a young man who was disturbed because of a general acceptance of the philosophic notion that to be a success in life a man has to like his chosen business. George Ashley Tomlinson had no love for the details of shipping. Already he had packed adventure into not so many years. He had been a cowboy in Wyoming. He had been captured by hostile Indians. He had been a newspaper reporter in Detroit, a fancy rider with Buffalo Bill's Wild West Show, a special writer on the New York *Sun* and, in turn, had gone back to Detroit to become an editor. While in

this capacity he married a daughter of James Davidson, the shipbuilder and shipowner of Bay City.

Through long evenings he sat with Mr. Davidson and listened to stories of the Lakes. The drama in them attracted his imagination and the financial possibilities in shipping gradually wore down his prejudice against leaving the newspaper business. It can be suspected there was another reason. His wife was the daughter of a man who had grown wealthy and while she was willing—more than that, she was insistent and was happy in doing it—to live within his income, the young newspaperman had definite ideas of his own responsibilities. He resigned and with $2,500 that had been saved, went to Duluth to become a shipping agent.

He knew nothing of the business but was determined what other men knew he could learn. Through the first year, or two, he met with many discouragements and often was tempted to return to Detroit where a job was still waiting. Then stories began to come down to the lower lakes of a newcomer who was getting cargoes where older men were failing but it was not until 1904 that vessel owners in Cleveland, Buffalo, and Detroit were to get to know him.

It was during an inquiry which the Merchant Marine Commission was holding into the state of shipping in the foreign trade when Mr. Tomlinson, now a fleet owner, came to Cleveland. Interest attached to his presence for they all knew Captain Davidson, and this son-in-law, who had made such progress, intrigued the curiosity of vessel men who had grown old in the affairs of the Lakes. When he concluded his testimony vessel men knew a formidable competitor was in their midst.

In view of what was to happen more than ten years

afterwards it is illuminating to recall some of this testimony to show how a young man who did not like the business he was in had studied to master his subject.

"I come from the northwest which is the wheat bin of this country. We are a long way from the seat of human activities. We do not know very much about the finances of the east. We do not know very much about the great industries of which this city is so splendid a center. We do not know very much about the public affairs in Washington. We do know, however, how to raise wheat. The thing we have to do is to find a market. The market of northwest wheat is in Liverpool and in order to compete in the Liverpool market we must have the very best transportation facilities the world can supply.

"We are bringing wheat from Duluth to Buffalo today for a cent and a half a bushel, and from Buffalo to New York, by rail, for about three cents a bushel. After we reach the seaboard we meet the foreign ship. Now, the Duluth shipper has no particular prejudice against the foreign ship, only what his experience has taught him. It taught him very recently, during the Boer War, when Great Britain made so many requisitions for her so-called tramp ships, that there was a scarcity of transportation facilities out of New York."

Representative Minor, of the committee, asked: "Supposing that a war should take place between Germany and England and that they should withdraw, in the same proportion as they were withdrawn in that small war in Africa, those tramp ships to be used as transports to supply their army and navy, what, then, would be the effect on the wheat fields?"

"It would paralyze us."

"It would cause general paralysis in American business?"

"In my judgment it would."

Representative Humphrey: "Under the circumstances which Captain Minor has described, a great portion of the farmers' products of the northwest would rot in the fields, would it not?"

"It would not rot in the fields, sir, for the reason that for a very large proportion of the crop there are now terminal facilities."

"Supposing the condition should last a year, what would be the result?"

"If another crop came on us we could not do anything."

It was while the Merchant Marine Commission was on its way from the eastern seaboard that the newly-formed Lake Carriers' Association was winning an important battle.

In the beginning of the season of 1904 contracts for hire were made with the Scoopers' Union, the Marine Firemen, Oilers' & Watertenders' Union, Lake Seamen's Union, Marine Cooks' & Stewards' Union, and the Marine Engineers Beneficial Association. One other organization remained—The Masters' and Pilots' Association.

A little while of waiting and receiving no contracts the Masters' and Pilots' Association presented a demand for an increased wage scale; accompanying this demand was another to the effect that "no master could be discharged unless his case was first referred to an arbitration committee."

The ultimatum was ignored. A strike was called. The

shipping season, scarcely under way, stopped—immediately.

To a great extent the fight of the Carriers was Harry Coulby's fight because he was now a partner in Pickands, Mather & Co. and president of the Pittsburgh Steamship Company, operators of more than 100 vessels and the largest fleet on the Lakes.

Mr. Coulby maintained that the captain was the person representative of the owner of the ship and as such could not be responsible to any other authority. He insisted that inasmuch as the captain was in sole charge of the vessel and as such was one whose orders must be obeyed he could not be master and still be a member of a union to which belonged those under him. He pointed out the incongruity of the master's demand that he could not be discharged by calling that same master's attention to a retained right to discharge members of the crew.

"And, anyway," he growled, "how many captains have been discharged in the last ten years? I can count them on the fingers of one hand."

For two months ships gathered rust as they swung at anchor; in the mines of Superior men were idle; on the receiving and shipping docks there was no work; iron rails leading from the mines to the ports were, like the ships, rusting as fires were pulled from under locomotives . . . the strike came to an end with captains agreeing to accept the wage scale of the previous year and rescinding their other demands.

Losing that strike broke up the Masters' and Pilots' Association but the effect it had on lake commerce can be understood by recalling the iron ore shipments up to June 1, 1904. There were 7,243 tons as compared with 4,521,576 tons up to the same date the previous year.

Fortunately the mills in the Pittsburgh district had, in storage, ample supplies to keep them active but had the strike continued another few weeks it is reasonable to believe that the entire manufacturing system of a nation would have been paralyzed.

That was what the Carriers foresaw. It was unthinkable, to them, that an organization of a few hundred men —less than 50 per cent of whom, as was shown at the time, were in favor of the demands—should have within their union votes such enormous power.

Chapter Nineteen

SAILS ARE DOWN—THE ROMANCE OF THE SCHOONER IS OVER

Always in a civilization, the most important problem is transportation. More important than kings or presidents, more important, even, than the boundaries of nations for, without it, there can be little progress.

This has been true from before the days of the Romans who defeated Gaul because their legions could move faster and further to the years of the World War when Germany held the advantage so long as her transportation lines were superior but who lost once these same transportation lines were pierced. In peace, the backward nations are those with few railroads, few automobiles, few developed waterways. And much of the greatness of the American nation can be attributed to the commercialization of its inland seas.

In the early years of the century, in St. Mary's river, new canals were being planned, channels were being deepened—dredges were wiping the muck from the bottom of Lake Ste Claire—vessel men were beginning to urge the elimination of the treacherous Limekiln crossing in the Detroit river—harbors at Milwaukee, Chicago, Buffalo, Cleveland, almost everywhere on the Lakes they were being made ready for deep-draught navigation . . . in comparatively a few years a now sympathetic federal government had spent $500,000,000 in preparing the way

that flood of commerce down from Superior and up from the lower lakes should continue its flow.

Men were prophesying the approach of the 600-foot freighter. It did not seem so preposterous as it would have seemed less than ten years before. Already the *Augustus B. Wolvin*, more than 550 feet long, and with a cargo hold capable of holding 10,000 tons of ore and hundreds of thousands of bushels of wheat was in the water. And, in 1904, agitation for the release of lake traffic to tidewater was finding its way into the formal records.

More than twenty-five years have passed since James J. Hill, president of the Great Northern Railroad; William Livingstone, president of the Lake Carriers' Association; Harvey D. Goulder, counsel for the Association, and others, who were in this bold adventure of transportation, appeared before the Committee on Rivers and Harbors in Washington with a plea for an improvement that, some day, must come. It is illuminating to recall their arguments and to see how, today, the reasons for building a ship canal across the State of New York, or an ocean-lakes connection by way of St. Lawrence river, remain unchanged.

Recalling some of their testimony illustrates one of the reasons for the enormous commercial development of the Great Lakes . . . the ability of the pioneers—and those who have followed—to look ahead, and to foretell, accurately, conditions to come.

"I am an old river man," said Mr. Hill. "My early experience was on the Mississippi, between St. Paul and St. Louis. I was agent, before I was twenty years old, of a steamboat line, and was connected with it before I went into railroading. A high-pressure boat, a boat that can

navigate shallow water, is useless as a means of transportation. If a railway could be built between Buffalo and New York, and was not compelled to carry passengers, or run a passenger train, I would undertake to empty all the boats on the suggested canal."

"I do not understand you, Mr. Hill," interposed the Chairman of the Rivers and Harbors Committee.

"I would undertake to drive that canal into a lily pond. The man is not born who will say that with the largest amount of tonnage, the proper facilities and the ability to get rid of passengers what a railroad cannot do.

"The best located railway in the world is one located on the water course. The whole question of transportation is overcoming the law of gravitation; and because you get alongside a water course and are on the line of least resistance you are able to make that river drop the bundle wherever you say. This applies everywhere in the United States and always will.

"Unless you construct a twenty-foot waterway thus enabling you to carry a big load with little money you may as well lath and plaster the bottom of the canal. Water transportation on the Lakes is the lowest of its kind in the world. But the trunk lines north of the Chicago river and east of Chicago are helpless. They cannot move their local business, or their through business. We are bringing lumber from Puget Sound. It goes to Buffalo and is there distributed all over the east and south. This business has grown up within six or seven years. In 1897 we had five trains a week to the Puget Sound district; now we have five a day.

"You must do something about this question of transportation from Lakes to tidewater. Transportation has been pounded on the head, and on the back and in every

other way until everybody is frightened and they do not know what to do, what they can do, and what they dare do. Build nothing less than a twenty-one foot channel in this proposed canal so big ships, modern ships, carrying ten thousand tons can navigate it. Lest there be misunderstanding, the railroads can, and will, work with lake transportation in bringing about lower living costs for everyone, everywhere, in this nation."

William Livingstone painted a word picture of conditions when he said:

"I remember the Detroit newspapers of 1881 containing a statement that was carried in all the press dispatches—it was to the effect that 1,500,000 tons of freight had been carried through the Sault canal in that year. I think the amount was 1,607,000 tons, if you want me to be on the side of accuracy. If you will take the ships G. A. Tomlinson is building now and measure that tonnage you will find that five of Mr. Tomlinson's new ships will carry that amount of tonnage in a single season and think nothing of it. In addition to these new ships there are so many others—a great many others. There have been tremendous changes in navigation along these Lakes.

"It has grown beyond the dreams of the greatest optimist, so to speak. It is almost impossible for any man to predict where it will stop. I remember of as high as seven dollars a ton being paid to transport ore from Lake Superior to Ohio ports. Of course, the boats of that time were very much smaller than they now are. I remember being caught with a boat in Marquette not many years ago and I thought I was facing ruination because I had to accept four dollars and fifty cents to transport a ton of

ore. The average for the past ten years has been about eighty-six cents a ton.

"Last night I heard James J. Hill, President of the Great Northern Railroad, say that we have the lowest freight rates in the United States of any country in the world. He mentioned freight rates starting as high as two dollars and twenty-five cents a ton, and coming down to Russia ——"

Mr. Hill interrupted to remark: "The lowest and the average there is one dollar and seventy-five cents a ton."

"Yes, I understand," continued Mr. Livingstone. "This in comparison with our railways which is seventy-two cents a ton, for hauling one hundred miles. Considering this it is an utter impossibility for any one to contemplate now competing in the transportation business unless he is to handle a reasonable amount of tonnage. The great difficulty on the Lakes is lack of terminal facilities. There is no problem in transportation in this country that can approach the problem on the Great Lakes.

"In 1881, 1,500,000 tons, roughly speaking, passed through the Sault canal. It was only in 1894 that it passed the 10,000,000 mark, but in 1898 it passed the 20,000,000 ton mark and it has now gone to almost 40,000,000 tons.

"In a morning newspaper I saw where England was boasting that the commerce and tonnage was greater in London than in any other port in the world. Their tonnage was valued at $220,000,000—a trifle over one-half the worth of the tonnage passing through the Sault canal in a year. It is well to remember that the annual total of $220,000,000 in London was arrived at after 365 days of navigation in a year whereas, through the Sault canal, something more than $400,000,000 worth of cargo was carried in 230 days.

"I think it would be a bold man who would stand here and attempt to predict what the limit of tonnage might be on the Lakes. I remember a couple of boats being built some thirteen years ago and people thought they were too large. Each carried some three thousand tons. Today we have 10,000-ton ships.

"Fifteen years ago a 2,000-ton ship was considered large. Today, I would not take a 2,000-ton ship as a gift providing I had to keep her in condition and run her. Nor, would any other carrier. This improvement we are asking is not a local matter but a national affair; if you want to benefit this country and do the greatest possible good to the greatest possible number you have got to improve the facilities on the Lakes."

"We are doing everything we can to have a through route by the Lakes, and between the northwest and the east and the seaboard established," declared Mr. Goulder. "You might as well say we will not make any improvement along the Lakes because a vessel owner may make some money out of the improvement. The vessel man made more money before the improvement was made because, with improvements, prices have been coming down. The average rate on the Lakes is less than one mill per ton per mile.

"The largest single fact in our recent shipping returns is the increase of steel steamers on the Lakes, from 237,145 gross tons in 1893 to 940,923 gross tons in 1903. In 1901 they built on the seaboard sixteen ocean steel steamers with a gross tonnage of 76,374. In 1902 they built sixteen ocean steel steamers with a gross tonnage of 95,105, and in 1903 they built eighteen ocean steel steamers with a gross tonnage of 101,471.

"In 1901, on the Lakes, we built forty steel steamers

with a gross tonnage of 139,102. In 1902 forty-one were built with a gross tonnage of 158,631, and in 1903 thirty-seven were built with a gross tonnage of 131,283. These figures do not include wooden steamers and schooners and brigs and barges. When we come here we say this to you:

" 'We are doing a cheaper transportation business than is being done anywhere else in the world.'

"There is a big northwest back of the Lakes.

"We are not saying to you 'if you will make the improvement there will be business.' We are saying we already have the business. We find whereas we can readily build a ship four hundred feet long as against two hundred feet, as was the case a few years ago, we cannot build our docks that way.

"There must be some place for these new ships to do business.

"When they built the Weitzel lock at Sault Ste Marie they used a small lock and before they got through they had to provide for a big lock—the Poe. Before that was put into commission vessels had to wait thirty-six hours—a condition that was improved by the Canadians when they opened their lock. I recall General Poe telling me, as he was building the new canal at Sault Ste Marie:

" 'I am making this lock big enough to accommodate the four largest ships on the Lakes.'

"Before water was ever turned into the lock we had ships so large that two, together, could not be locked through at the same time.

"Wherever you look for improvements on the Lakes you will find that same condition—we never get started early enough. And when any board says a development

'is not needed for years to come' I say, from my own experience, it should have been begun years before."

The fact that, twenty-six years ago, no action was taken towards the building of the proposed deep-draught water route—and that it remains unbuilt—in no wise lessens the force of the prediction that, some day, this improvement will come. Transportation between producer and consumer is a science and the moment a ton of freight is stopped there is an addition to its cost. The cost may be imperceptible but it is accumulating, nevertheless. Under present conditions there is little difference between the all-rail grain movement from Chicago to New York or from Chicago to Buffalo, by water, and from there by rail, or barge, to the Atlantic seaboard. The cost of transfer through the elevators in Chicago and Buffalo offsets the normal saving of the all-water route but, some day, economic necessity will compel the elimination of these extra costs.

Four water connections between the Lakes and other bodies of water are getting serious attention:

1. Deep draught connection with the Atlantic by way of the St. Lawrence river.

2. Deep draught connection with the Atlantic by a ship canal across the State of New York to the Hudson river.

3. Barge channel connecting Lake Erie with the Ohio river.

4. Barge channel incorporating unfinished navigation improvements in the Upper Illinois and Des Plaines rivers by the State of Illinois; and further improvements by the United States of the Illinois river, connecting Lake Michigan with the Mississippi river.

These Lakes form the transportation link between pro-

ducer and consumer. Not only is the territory tributary to them the greatest iron ore district in the world but beyond these mines of Superior, and around them, lies the world's most important grain growing district. It is a district that includes the more important grain producing states of this country and nearly all the grain territory of Canada.

Looking at the figures we find:

—Canada and the United States producing more than 35 per cent of the total wheat of the world.

—producing a range of from 31 to 50 per cent of all the oats.

—nearly 20 per cent of all the barley.

—approximately 20 per cent of all the rye.

—70 per cent of all the corn in the world is grown in the United States.

The four ports of Fort William-Port Arthur, Duluth-Superior, Milwaukee and Chicago ship nearly all the grain carried on the Lakes and in recent years there has been an annual movement of more than 400,000,000 bushels. Enormous facilities have been developed for the handling of the grain. Nearly all that is grown in the Canadian Northwest funnels towards the twin ports of Fort William and Port Arthur on Lake Superior. This has resulted in the greatest development of modern elevator facilities to be found in any grain shipping port in the world.

In earlier days, that is, when the Canadian Pacific Railroad extended its tracks from eastern Canada into the Northwest, the grain was brought down from Winnipeg in sacks and was handled in carload lots. Bulk grain began arriving before there were elevators and the steamer *Erin* took the first cargo in the fall of 1883. The

vessel was placed alongside the dock and the cars were shunted over. Spouts resting on top of the grain door and leading into the hatch of the ship were tried and proving unsuccessful the grain was loaded, by hand, from two-wheel carts.

The following year the first elevator, with a capacity of 250,000 bushels, was built. The carrying capacity of the grain fleet was but 20,000 bushels while the capacity of the freight cars was 480 bushels. They were transported in fourteen-car lots to the two ports. In 1886 the annual movement had reached 3,000,000 bushels and in that same year the largest vessels entering the harbor were:

Iron Duke	1,402 tons
Iron Cliffs	1,624 tons
H. D. Alverson	1,504 tons
Australasia	2,202 tons

The *Australasia* was the largest craft on fresh water.

Until the building of a second elevator with a capacity of 1,500,000 bushels, sheds were used for storing the surplus grain. Men, with shovels, unloaded it from the cars into two-wheel carts and barrows, these being pushed up an incline and their contents dumped into the bins. Today there are fifty elevators with a capacity for approximately 75,000,000 bushels of grain.

The Canadian National Railways has established a classification yard with numerous tracks. As grain cars are received their destinations are examined and a sign placed in the front of each car indicating the track to which it is assigned. A single switch engine shunts the cars up a slight incline where they are released over a 4 per cent grade into the classification yard. A switchman sends them from the main track to the sidings while riders

man the brakes. By this method the railroad company has handled more than 2,000 cars in a day.

In the early years five or six days—and, sometimes, longer—were needed to load a cargo of a few thousand bushels of wheat; today a ship is loaded with 500,000 bushels in less than seven hours. The grain loading record is held by the steamer *Lemoyne*, which loaded 555,000 bushels of wheat in seven hours and twenty minutes at Terminal Elevator Number 7, in Port Arthur, on August 13, 1928.

There is little competition between the Canadian twin ports of Fort William and Port Arthur and the American twin ports of Duluth and Superior, in spite of their location on Lake Superior. The Canadian ports handle the grain from Northwestern Canada while the grain carried through the American ports is almost entirely the product of Minnesota farms, and farms in the states farther west and south. The elevators in Duluth have a storage capacity of some 50,000,000 bushels.

In Milwaukee there are facilities for 10,000,000 bushels while in Chicago the elevators can handle approximately 60,000,000 bushels. At a dozen other ports along the Lakes there are storage elevators while in Buffalo, the principal receiving port on Lake Erie, there are facilities for 40,000,000 bushels.

Startling though the immensity of these figures may be, this commerce in grain almost becomes a commonplace in the tremendous flow of traffic on these Lakes—for, in addition, there is iron ore, coal, stone, copper, lumber, a dozen other commodities, some larger in tonnage, some smaller . . . but all of them, gigantic.

Chapter Twenty

A MAN IS PICKED

ALTHOUGH the movement of grain through the canal at Sault Ste Marie did not reach 100,000,000 bushels in 1904, carriers could see what was coming. Not in actual figures, of course, but the necessity for the bulk freighter was apparent.

The transition from sail to steam and from wood to steel had come within a few years. In 1870 the steam barge *R. J. Hackett*, the first ship with engines aft and the forerunner of all the bulk freighters that now ride these waters, was built. The first steel steamer came in 1886 and in 1900 the first 500-foot vessel was launched to be followed, in 1903, by the *James H. Hoyt*, first ship to have hatches spaced 12-foot centers and so constructed as to meet the rapid loading and unloading requirements of the docks.

The *James H. Hoyt* was an experiment for only one trip. The rapidity with which she was cleared from port, after loading and unloading, marked the beginnings of the tremendous traffic that has been developed. Large before it now became—stupendous! But great as had been the accomplishments of vessel men they could not have been made possible without the accomplishments of other men who, working over drawing boards and in machine shops, had improved devices for the quick loading, and unloading, of ships.

Men who were young as pioneers and still were young

as veterans of the Lakes had seen the time when four or five days were required to load 300 tons of iron ore; now with the hoisting rig of Alexander Brown, the grab buckets of the Hoover & Mason machine, and the invention of George H. Hulett—an invention that was a stiff-legged contrivance with its operator descending into the hold of a ship and bringing up a self-filled bucket—cargoes of 10,000 tons were being taken from ships in a few hours.

Without these improvements there would have been little need for ships much larger than the schooners of thirty or forty years before. It still would have cost $5 and $6, or $7 and $8, a ton to transport ore from Superior to the Erie docks; wheat and corn would have cost from 10 to 15 cents a bushel to carry from Chicago, or Duluth, to Buffalo.

Allowing that channels would have been sufficiently wide and deep, a 10,000-ton ship would have been even less useful in the earlier days than was a 2,000-ton bulk freighter now. To load, under the primitive method of hand-wheeling the ore over the sides and into the holds would have required thirty-five days with a longer time for unloading. Such a vessel would not have made more than three—and, likely enough, but two—trips in a season. The cost of maintenance would have been prohibitive. In the mines vast changes had taken place. No longer were practically inexhaustible quantities being attacked by men with picks, and shovels, and buckets—huge excavators were at work; the red metal was being handled in tons instead of pounds. The question of getting it out no longer existed. The waiting ships could handle it. There was iron for all who had, and could get, leases. So,

the improvements in loading and unloading methods on the docks reached further than to bring in larger vessels.

They brought about the development of mills and furnaces along the Lakes and away from the Pittsburgh district. Particularly did they bring about the iron and steel development around, and in, Chicago where Jay C. Morse, after resigning a partnership in Pickands, Mather & Co., in 1898, had gone to organize the Illinois Steel Company. Of the original partners, Samuel Mather alone remained. Colonel Pickands had died in 1896 and his place had been taken by his son, Henry S. Pickands. It was a son who, long before his own passing thirty-three years afterwards, was to prove his right of succession in wide undertakings.

They also brought about another change which was more interesting than important. In Superior, Wis., in 1888, Alexander McDougall, as part owner of the American Steel Barge Co., was planning a totally different type of cargo carrier. Getting his design worked out he communicated with his partners—the Rockefeller interests—and receiving their consent to the experiment went ahead with the building of the craft.

A year later captains, sweeping the horizon with their glasses, were startled to see what appeared to be the overturned hull of a ship, with smoke funneling from the bottom—a second scrutiny, this time a long one, disclosed something low in the water, decks awash . . . the "whaleback" had come to the Lakes. Beauty in line or luxury in appointment had no place in this innovation—it was a ship designed and built for a single purpose, to hold cargo.

It was immediately successful. Nineteen or twenty more were built during 1889 and 1890 and to sailors they became known as "McDougall's dream." During

the next ten years more of them came to the Lakes, and they were so freakishly picturesque that in the East, and in other parts of the country away from the fresh waters, they were considered as typical of ships on the Lakes. The "whaleback" never was that. Less than 100 of them, all told, were built. They were sturdy, seaworthy, and suited to the cargoes they carried. But, with the new dock equipment, loading and unloading them became a difficult task and in the natural order of progress they lost their popularity.

A few still may be seen but, for years, none has been built; it is quite unlikely that more of them ever will be built.

The improvement in the facilities along the docks and their own widening interests in iron mining properties encouraged the Pickands-Mather group of partners in Cleveland to establish another steamship company to add to the fleets they already had. This new one was called the Lackawanna Steamship Company. The capitalization was $1,250,000 and contracts were let immediately for the building of five ships.

In 1913 the company became the second largest fleet owner on the Lakes. It changed its name to the Interlake Steamship Company and purchased:

Seventeen vessels from the Gilchrist Transportation Company; four from the Mesaba Steamship Co., two from Interlake Co., two from Huron Barge Co., three from Providence Steamship Co., one from Standard Steamship Co., and three from Acme Steamship Co.; these, added to the seven it already had, built up a fleet of thirty-nine ships.

In the years preceding and in the years that have passed since the incorporating of this company few men

Iron Ore Unloaders in the Hold of the *Michael Gallagher* at Cleveland

Photograph by Margaret Bourke White

have been so useful in building an unparalleled commerce as the man they named as first president—Henry G. Dalton.

Born in Cleveland on October 3, 1862, Mr. Dalton went to work when he was sixteen years old as a clerk on the Erie docks. In the course of his duties he came in contact with Samuel Mather and in 1883 was taken into the central office of the firm. Behind a youth's modesty, Mr. Mather recognized qualities the lad could not have known he possessed.

A judgment of values—in persons and things—was characteristic of Samuel Mather even in those days. It is no more than reasonable to say that one of the definite causes for the rapid, deep-rooted and far-reaching growth of Pickands, Mather & Co. has been this clear faculty on the part of one of its founders to choose certain men out of a group and to make them partners in wide enterprise.

The story of Pickands, Mather & Co. is the story of these men who have not failed to measure to the almost unmeasurable demands placed upon them—the handling and the managing of a hundred different enterprises in iron, coal, furnaces, docks, steamship companies, none of them small and many of them very large.

Since 1893 Henry G. Dalton has been one of those chosen as a partner.

Unless, some day, he tells it—and that is unlikely because of a modesty that has grown with the years—no one will ever know the range of his accomplishments. It has been his preference that they be kept out of the record but it can be said that he has supplied much of the force behind every improvement that has come to these

waterways in more than thirty years—and there have been many of them.

His desires, however, have not wholly kept him from being known. No man of great accomplishment can ever remain that although Mr. Dalton has succeeded better than most leaders so motivated by modesty.

In 1925 President Coolidge selected him as counselor to the nation on the shipping situation. Mr. Dalton's report to the President was eagerly received and favorably acted upon; although several years have passed its importance has not diminished. In writing it he was not buffeted by prejudice. He saw the situation as it was and in view of the growing American Merchant Marine his conclusions are even more interesting now than when they were written:

"I believe the nation now realizes the need of an adequate merchant marine, both for the development and protection of our foreign commerce and for the requirements of the national defense, and will support it. A restatement now of the determination to establish and support a merchant marine will be helpful and timely.

"We have already made a good start with the ships engaged in coastwise and intercoastal trades, which under the wise laws existing (which should be preserved) restricting that service be American built, owned and operated ships, are giving without other aid a fine service. It is growing both in volume of business and in the number of ships.

"The foreign or offshore shipping, however, presents an entirely different situation. It is probably the most competitive and complicated business we have to deal with, requiring, as it does, the knowledge of ships, their

operation, traffic problems and market conditions, port facilities and regulations, and the navigation laws of the countries the world over. For us to compete efficiently and successfully with the nations who have built up the large carrying trade of the world extending over generations—one might fairly say centuries—is no small task and will require skill, patience, time and money to accomplish it.

"Governmental operation can never equal in efficiency or economy private operation. It seems unnecessary to enumerate the many reasons therefor. It is an accepted fact. Therefore, we should continue to make every effort to transfer to private ownership as promptly as it can be done the various lines in operation; but this probably cannot be accomplished until the services, one after another, are brought to a profitable operating basis or nearly so and until that time they must be maintained and operated by the Government.

"But during this period of governmental operation and in order to facilitate the transition from one form to the other, in selecting the shipping men to manage the operated lines care should be taken to secure those who have substantial business prospects and experience in foreign shipping, with the view that they may eventually take over the ownership of the property and business they are managing. The sale of any line should carry with it a guarantee of its continuance for a reasonable number of years. Such provision has been required in making recent sales.

"I believe the consolidation of some of the services would be advantageous and in the line of economy, and I suggest also that further study be given to that feature as well as to the policy now in force with respect to re-

munerating managing operators for their services. If some method were devised whereby these managing operators could become interested in the operating profits and losses of their respective fleets, benefit would result therefrom. A considerable expenditure now made for overhead supervision by the shipping board would be unnecessary if such a plan were adopted.

"The removal of the restrictions forbidding the railroads to own and operate ships in international trade would also be helpful. It would both extend the transportation facilities of our foreign commerce, and the ships employed, assuming them to be of American register, would be suitable for the needs of the national defense. This and any other revenue of aid in upbuilding the merchant marine should be encouraged.

"The tendency of world shipping is now towards the regular operation of the cargo liner on specific routes. It is agreed that the trade routes now being served are covering adequately with suitable ships the present needs of our foreign business. There is some difference of opinion as to the proper number of ships that should be in service on some of these routes. It is also likely that as time goes on there will be need of change in the trade routes to be operated, either by adding new services or discontinuing those which after a fair trial are found either too costly to maintain or to be furnishing unnecessary service; but both of these matters will be satisfactorily dealt with by a good management.

"I recommend that the Department of Commerce, which has close contact with and access to the best governmental knowledge of the needs of commerce and industry as a whole and which is also best fitted to determine the policy, needs and adequacy of these trade

routes, the addition of new routes or the discontinuance of old ones.

"Cargo ships of the liner type are now available in sufficient numbers to serve the present needs of our foreign commerce and while this type of ships also will be useful to some extent for the requirements of the national defense and the mails, these latter services will require ships with greater speed and provisions for carrying both cargo and provision of such ships should be taken into consideration. Co-operation between the departments of the army, navy, commerce and postoffice in selecting the types of ships to be used on the different trade routes should be encouraged.

"In a recent survey it was found that there are sufficient ships available in the existing fleet to provide for the present and nearby a future needs without the necessity of replacement with new tonnage in any material amount, but to take care of changes in growth of trade, obsolescence of the present fleet, etc., new ships will eventually be required. The adequacy of the present fleet is based upon the assumption that the plan for the dieselization of sufficient number of ships in the existing fleet to be used in those routes where they will be most serviceable and economical in operation will be carried out. When greater need arises the requirements for the different governmental agencies that are not adequately met by the present fleet can be provided.

"I suggest that consideration be given to the use of the naval reserve to such extent as may seem reasonable and proper as a means of giving opportunity for the practical development of that branch of the service.

"For purposes of efficiency and economy I recommend that the complete separation of the Emergency Fleet Cor-

poration from the Shipping Board and transfer Emergency Fleet Corporation of all ships, with all terminal and other properties and facilities used in connection therewith and now owned by the Government, together with all books and accounts, the insurance funds and the Research Bureau. I do not believe that the methods now in force will ever be successful and to my mind the confusion and dissatisfaction now existing are only to be expected. There appear to be considerable duplication in work and a degree of conflict of authority which together lead to increased costs and lower efficiency.

"Reverting to my suggestion of the advantages to be obtained through co-operation among certain departments of the Government which are concerned in this enterprise, in order to secure this end, and at the same time to provide the reorganization of the controlling body of the Fleet Corporation, I recommend that a board of directors or trustees, consisting of four members of the Cabinet, specifically the Secretary of the Army, Navy, Commerce and the Postmaster General be set up. If, in your judgment, there should be representation at large on this board, I suggest that three persons representing the Atlantic, Pacific and Gulf regions be added to it. I further recommend that the President of the United States appoint, in addition to the persons named above, a chief executive of the Fleet Corporation who shall also be a member and President of the Board, and who, with the approval of the board, will dictate the policies and carry on the business of the Fleet Corporation. All of the persons so appointed should serve subject to the pleasure of the President of the United States.

"As soon as the ships and other properties connected therewith are turned over to the Fleet Corporation, as

above constituted, I recommend that a careful survey and inventory of all ships and properties, together with an audit of the books and accounts, be made, and that the books of the Fleet Corporation be adjusted thereto. At the same time it should be determined what number of ships, with suitable reserve, will be required to serve the trade routes it is decided shall be operated, together with the terminal and other properties required in connection therewith. Inasmuch as the mails and the requirements of the national defense need ships of a different character, and of a more costly service than the cargo-carrying trade it seems reasonable that the extra costs of these services, both as to ships and operations, should be fairly apportioned among the governmental departments served and included in their respective departmental budgets, and paid over to the Fleet Corporation. Arrangements for the proper continuance of these allowances, when and as earned, if the lines are sold for private operation, should be made.

"The remainder of the property, both ships and otherwise, should, in my opinion, be disposed as promptly as practicable. While it is desirable to get as much of a return from this part of the Government's investment as possible, the early disposal of it will bring the best ultimate results. The ships not needed for service, if kept, will require constant attention and expenditure to prevent deterioration. The world today is overstocked with shipping. Most, if not all, of the ships not needed will later be found unsuited for service, and, therefore, will have little future value. The present time seems opportune for scrapping them. This kind of material is useful now and has good value. Shipyards now idle awaiting a return of shipbuilding can well be employed at this

work during their period of idleness. I believe an attempt should be made to dispose of the surplus ships in small numbers from time to time, and spread them out among the various concerns that can scrap them, thus benefiting many industries.

"These suggested changes would restore the Shipping Board's functions to their original status as largely a judicial and regulatory body, and while the regulation of sea-borne traffic by reason of world competition both in shipping and commerce, involves entirely different problems from those of the railways, for instance, and therefore should be very carefully entered into, still I believe some provision for a regulatory body to which American shippers and shipping can have access, would be wise. The continuance of the Shipping Board would provide for this among the other duties left to it.

"In conclusion, I desire to express my great appreciation of the services rendered and the information rendered and the information which has been freely placed at my disposal by all the departments and agencies concerned in these matters in the preparation of this report."

The friendship that has grown between two men in business—Samuel Mather and Henry G. Dalton—is something far more than a comradeship in trade and development. A personal quality has developed that is difficult to define in words so let a quiet deed of 1924 illustrate what words will not express.

In June of that year the newspapers carried a simple statement to this effect:

"A gift of $400,000 from Henry G. Dalton is announced by Kenyon College, Gambier, Ohio. The money

will be used to construct the Samuel Mather Science Hall."

Samuel Mather was prevented from receiving a higher education because of injuries sustained when he fell in his father's mine in Ishpeming; Henry G. Dalton was denied such an education because, early, he had to go to work. But each has been passionately interested in educational progress and Mr. Dalton knew of no better way to honor his partner and friend than by giving to such a cause.

Business is something more than a hard exchange of facts and figures while such men remain.

Chapter Twenty-one

BULK FREIGHTERS, CAR FERRIES, SAND SUCKERS, AND STONE

With the coming of the 600-foot freighter, the Lakes took on their modern commercial dress.

The Interlake Steamship Co., of which Henry G. Dalton is now president, was among the early companies to bring in these mammoth cargo carriers. Another who saw the necessity for such ships was William Penn Snyder, in Pittsburgh, who, in 1909, built the *Shenango*, which was an even 600 feet, overall.

Although, properly, not of the Lakes, Mr. Snyder, before his passing in 1921, grew to be one of the great builders of this great commerce. Like so many others of importance in later life, he started as an office boy, running errands for Shoenberger & Co. He became so valuable before he was twenty years old that his employers were casting around in search of a business suit of clothes that would fit him. While they were trying to decide what to offer the youth furnished the answer.

Of an afternoon when he received his pay check he announced:

"I am leaving two weeks from today."

They inquired what he was going to do and he told them:

"I am forming a partnership with John Leishman."

" 'Leishman'?

"Yes. That's why he quit, too. We are going into the iron brokerage business."

His employers smiled. Leishman was not much older than Snyder, and the latter was only nineteen. The year was 1880. They tried to dissuade the junior partner of "Leishman & Snyder," as they had already named their anticipated firm, by telling him the iron brokerage business was a proposition for men to tackle, and nothing for a couple of striplings to fiddle with.

That argument provoked the lad. But he smiled and closed the matter by saying: "Wait and see."

His old employers did not have long to wait. Within five years the iron brokerage firm of Leishman & Snyder was one of the most prosperous concerns of its kind in Pittsburgh. It can be stated that much of its prosperity was due to the unusual business wisdom of a young man not far beyond his voting age. In 1888 Leishman was offered an interest in the Carnegie Steel Company. He accepted, sold his partnership holdings, and the firm became known as W. P. Snyder & Company.

Henry W. Oliver became a business associate with Mr. Snyder and, together, the two men cleared the way for much of the development of the Superior mines. Oliver's part in that development has been told, to some extent, and such was the older man's liking for his young associate that when new iron bearing properties were discovered Mr. Oliver did not fail to include a portion of the stake in the name of Snyder.

"Usually it was too much," Mr. Snyder often recalled in his later years. "He put me down for subscriptions of ten and twenty thousand dollars as though all I had to do was to write checks. Frequently I complained over

the weight of the load but, somehow, I always managed to wriggle through with my payments.

" 'Tush. Tush,' Mr. Oliver would say. 'I'm doing you a great favor. These properties will be worth ten times what we're paying for them. Yes, more than that, many times more than that.'

"I believe I can honestly say I foresaw much of the future of the iron country. Probably some of that foresight was furnished by Mr. Oliver. But foreseeing a future and being financially able to act in contemplation of it are different things. Often I had to rake and scrape to the last cent to hold up the end Mr. Oliver gave me to hold."

When Mesabi ore came down Mr. Snyder was among the first advocates of a hundred per cent use of it in blast furnaces. Several years passed before he could convince his associates there was no need for mixing it with other ores and in 1900 he went to the Shenango Furnace Company's plant in Sharpsville, Pa., and ordered that the experiment be tried.

"Don't do it, Mr. Snyder," advised the plant superintendent.

"Why not?"

"You'll blow ——"

"I've heard that story a hundred times. How do you men know a thing can't be done until you try it—and keep on trying?"

The superintendent saw argument was useless. He shrugged his shoulders and grinned:

"Well, Mr. Snyder, it's your property."

The experiment was tried. It was successful.

In 1904 Mr. Snyder became president of the Clairton Steel Company and finished the building of the large

plant at Clairton, Pa., which was taken over by the United States Steel Corporation in 1906. With the disposal of that property he began the intensive development of the Shenango Furnace Company, bringing to it the extensive ore holdings, blast furnaces, coke ovens, and coal mines he had accumulated.

To complete the chain of his development he needed one more link—ships.

He began to get them with the building of the *William P. Snyder* in 1906, the *Wilpen* in 1907, the *Shenango* in 1909, and in 1911 displayed his earnestness by announcing plans for the *Schoonmaker*, 617 feet long and with a beam of 64 feet. It was the largest vessel in the history of the Lakes and one of the largest cargo carriers in the world. There is an interesting story of how he built the way to that announcement.

In the Mesabi range he had iron—lots of it. It was ore needed by the mills and furnaces of Pittsburgh, and sensing an opportunity to build a ship with no outlay of cash he went to Jones & Laughlin, in Pittsburgh.

"I need another boat," he told Mr. Jones, and put his plans on the desk.

The ironmaster listened as Mr. Snyder continued:

"I'll make a deal with you. I'll trade you ore for enough plates to complete these drawings."

"You mean you want Jones & Laughlin to swap plates for ore?"

"Precisely."

"On what basis?"

"After the ship is built we'll use her to haul down the ore to pay for the plates."

"Hmmm."

"Or, we can haul down the ore in the *Shenango*."

"Hmmm."

Mr. Jones frowned. Mr. Snyder waited. They began to bargain. Or, rather, Mr. Jones offered a compromise. It was not acceptable. The meeting ended with Jones & Laughlin agreeing to furnish the plates in exchange for the ore.

Then Mr. Snyder went to the Great Lakes Shipbuilding Company, in Ecorse, Mich. He submitted his plans and asked for an estimate of their cost. It was figured. He returned to Pittsburgh and floated a bond issue covering the cost of building the vessel. With his name on the bonds nothing else was needed for their disposal. The ship was built. It paid for itself out of profits before the maturity of the bonds.

So satisfactory was the plan that a year later, when Mr. Snyder decided to build another vessel—a sister ship to the *Schoonmaker*, this one called the *W. P. Snyder, jr.*—that there was no difficulty in making a similar arrangement.

The final link to a chain of development was forged. Mr. Snyder had transportation.

His was now one of the strongest of the independent companies of the industry. So well had he managed it that, within a few years, he was offered the presidency of the United States Steel Corporation—not many men would have acted as he did; he declined the invitation to continue the business his efforts had built.

While W. P. Snyder, H. G. Dalton, G. A. Tomlinson, and other men were building large enterprises with the aid of bulk carriers there were those among them, and aside from them, who were being attracted by a different opportunity—the business of carrying finished products to the ports of the Upper Lakes.

The package freight business has grown until it is now 35, or 36, per cent of the value of the total commerce of the Lakes although, in tonnage, it approximates only 3 per cent. Although there were a few ships engaged in this commerce prior to 1860, it became a serious business two years later when J. C. Evans, and his son, E. T. Evans, launched the first iron ship—the *Merchant*—on these waters. The introduction of this vessel began what is now called the Great Lakes Transit Corporation. In operation with the *Merchant* were the *Bradbury* and *Sun*, sister ships, while another vessel, the *Mercury*, sailed between Buffalo, Milwaukee, and Chicago on a route previously organized by J. C. Evans.

Trade came in such volume that the vessels could not handle all of it so, seven years after the launching of the *Merchant*, the *Philadelphia* was added to the fleet and, later, three more vessels—the *India*, *Japan*, and *China*—were added.

General merchandise through the canal at Sault Ste Marie had grown from 5,690 tons in 1855 to 33,632 tons in 1867, when the Pennsylvania Railroad Company organized the Erie & Western Transportation Company; other railroads soon followed suit in tapping the trade of the different ports. In 1872 the tonnage went through the 100,000 mark for the first time; in 1887 it reached 344,586; in 1905 it was 836,583, and in 1915, when the total reached 1,595,398 tons, organization work was started on the Great Lakes Transit Corporation.

A year later announcement of the formation of the concern was made. Its capitalization was $20,000,000. W. J. Conners was named chairman of the board, and J. C. Evans, a grandson to the builder of the *Merchant*, was elected president. Thirty ships, with an aggregate

tonnage of 150,000, were in the fleet and among them were vessels that had belonged to the Western Transit Company, a subsidiary of the New York Central Railroad; Erie & Western, of the Pennsylvania lines; and the Mutual Transit Company, which had been organized through a combination of interests in the Erie, Lehigh Valley, N. Y. C., and Delaware, Lackawanna & Western railroads.

The purpose of railroad companies getting into this business, in preference to the bulk carrying trade, was to furnish a convenient service for shippers moving goods between Erie and Superior ports. Inasmuch as the railroad companies owned most of the water terminals it was natural they should be among the pioneers in the development of the package freight business.

In addition to the Great Lakes Transit Corporation there are a number of other package freight lines, among them being: Goodrich Transit Co., Detroit & Cleveland Navigation Co., Cleveland & Buffalo Transit Co., Arnold Transit Co., Chicago, Duluth & Georgian Bay, Minnesota-Atlantic, West Points Steamship lines, Wisconsin & Michigan Transit Co., Hill White Transit Co., Ashley & Dustin, and the Red Star Navigation Company.

They are now handling some 4,000,000 tons of freight, annually and collectively. Freight of all description is carried and perishable goods are protected in enormous refrigerators especially designed for the ships. In the late months of each season these ships also become grain transports from the Upper Lakes. The package freight carriers, like the bulk freight carriers, have made a great contribution in lessening living costs by continually reducing their rates with increasing business. It may be interesting to

The Bridge-tender

Photograph by Margaret Bourke White

know the savings, over all-rail hauls, from different points to Duluth:

From Boston, 21 to 66 cents, per hundred pounds, depending on classification of freight; from New York, Philadelphia and Baltimore, the same savings; from Albany, 21 to 66 cents; from Buffalo, 24 to 83 cents; from Cleveland and Detroit, 17 to 65 cents.

Excepting those vessels having accommodations for many passengers, the package freighters are ships from 3,000 to 5,000 gross tons. Vessels under 400 feet in length usually cannot compete, successfully, in the bulk trade and many of these smaller ships have been taken out and converted into package freighters.

It will surprise you to know that the ships belonging to the various companies now carry, in gross numbers, some 30,000,000 passengers each year.

On any other waterway in the world this would be an enormous traffic; it is an enormous traffic on this waterway, but the figures are passed along casually by those who have them in charge—there are so many totals so much larger that these seem small.

On but one of the Lakes—Michigan—the car ferry service is the most extensive in the world. These ferries operate between Grand Haven, Mich., and Milwaukee; Ludington, Mich., and Milwaukee, and Manitowoc, Wis.; between Frankfort, Menominee, and Manistique, Mich.; between Manitowoc and Kewaunee, Wis., and Frankfort, Mich. There are other ferry companies on the Detroit river, over the Straits of Mackinac, across Lake Erie and on Lake Ontario.

This method of transporting freight cars was started on the Great Lakes by the Ann Arbor Railroad in November, 1892, when the first ferry—of wooden construction

—went from Frankfort, Mich., to Kewaunee, Wis. All the ferries now in use follow the same general lines of that first one but steel has replaced wood, and carrying capacity has increased.

Each Lake Michigan ferry carries from twenty to thirty freight cars and, in addition, has room for thirty automobiles without loss of railroad car capacity. They are so constructed that they operate through the winter months, excepting those running to Menominee. Wide-beamed, there are four tracks under their decks to which the cars can be shunted, and taken off, without difficulty. In length they stretch as far as 350 feet, with a maximum beam of 64 feet.

One romance that has gone from these Lakes is the romance of lumber. Forests in the areas tributary to them have been stripped, almost, of their once "inexhaustible supplies of timber" and the song of the shantyman is not often heard. Where once a billion feet of lumber were sent down in a season less than 200,000,000 feet come now.

There were hard men among those lumberjacks of Michigan, Wisconsin, and Minnesota in those days of forty and fifty years ago—hard men, hard days, and hard towns. Sprawling among the pines above Houghton Lake, in Michigan, was the toughest town of all—Harrison, where Jim Carr, and his wife, Maggie, operated a combination bar and dance hall. Wooden buildings housing saloons, restaurants, and hotels, with here and there a grocery store or butcher shop, lined a main street down which lumberjacks came after felling their trees for the demands of Commerce and from which they turned into saloons to spend what this same Commerce had paid them for their work.

On pay nights Carr's place was crowded. Men danced to the tinnings of a cheap piano, fought for drinks, and the bartenders threw the money into pails which were emptied by Carr when filled with their bills and their silver. Whiskey was cheap in caliber, and plentiful. When helpless drunks fell from their places against the walls they were dragged out, stripped of what money they had left, and tossed aside to awake in the morning and return to the woods for another six months of work.

There was no law, excepting as dictated by those who made it. In Harrison, Jim Carr and his wife, Maggie, were judge and jury. Strange, lurid stories have come down the years of Carr, and his wife. Men were killed in his place; men disappeared; fights were frequent and the combatants fought with fists and boots. The first to go down was jumped on and often stamped to death under spiked feet.

The time came when an outraged state sent its forces of law and order to Harrison to arrest Carr for a killing. After two trials Carr was convicted but the state supreme court reversed the decision because of "prejudicial testimony" introduced by the state's attorney general and while holding that "Carr was a very depraved man" ordered a new trial. It was never held.

A few years afterwards Carr was taken ill. A doctor was summoned and he said:

"Unless you quit drinking, you will die."

When he left Carr threw the pills and medicine out of the window and reached for his purse. But two dollars remained of the thousands he had taken from the tin pails. He ordered his attendant to get two bottles of whiskey. He gave one away, drank the other, got out of

bed and went to a barn where he collapsed on a heap of straw. During the night he was frozen to death.

Lumberjacks went to seven ministers in search of one who would conduct burial services. All refused. The lumberjacks, two hundred of them, then carried Carr's remains to a grave dug in a brush heap and while a giant Swede, the only one who could read, bellowed prayers from a Bible the earth was tossed in. The mourners gave a cheer and stampeded towards a saloon. Maggie Carr died six months later, a public charge.

There were "Jim Carrs" in every lumbering town, only none of the them became quite so notorious as the giant of Harrison.

Today, Harrison is like most of those other lumbering towns, a community of a few hundred people, with no police force. In other days there were no policemen because the lumberjacks would not allow them; today there are none because they are not needed.

The lumber industry, with its romance and its vivid splashes of color, has moved away. The lumbering towns that remain are decent and respectable, with their electric lights and paved streets.

The domestic traffic consists of logs, staves, shingles, and with wood pulp and pulp wood forming the bulk of the imports.

But while lumber has lost much of its importance the carrying of stone has grown into a large business. A large percentage of the stone movement of some 700,000 tons annually is transported by what is known as the Bradley fleet.

In 1911 Carl D. Bradley became associated with the Michigan Limestone & Chemical Company, in its offices in Chicago. A year later he went to Rogers City, Mich.,

to become general manager of the company and before his death in 1928 he had developed the concern into the largest of its kind in the world.

In its quarries the company has, at the present rate of consumption, sufficient limestone to last for several hundreds of years. This stone, as an agent of industry, now enters into a multitude of practices. It is used in the making of iron; in the chemical industry; agricultural lime is made from it and, also, chicken feed; the cement industry is a large user. Not many years ago all stone under the dimensions of one inch and one-half was spouted away into Lake Michigan; with the development of the cement industry 5,000,000 tons of what once was waste began to be reclaimed from "lake storage."

Although the self-unloading vessel—a ship original with the Lakes—came out in 1908 to Mr. Bradley are attributed many of the improvements which have made this character of ship one of the economical and useful contributions to commerce. Practically all delays in unloading are eliminated and, normally, this amounts to about 10 per cent of the time the ship is in operation. The shorter the trip the more important become these delays and the greater the number of trips the greater the saving.

These ships can go anywhere, almost, and discharge their cargoes. It is not necessary they have dock facilities. With deep enough water they can sidle up to a bank and the outstretched boom, located in the bow, can shift the cargo from ship to shore. Foundations for lighthouses that, formerly, took seven weeks to build are now put in place in that many hours by the simple process of steaming the ship to a spot indicated. Anchors are dropped and the stone foundation is carried overboard.

The *Carl D. Bradley*, flagship of the fleet, is 638.8 feet

overall with a displacement of 21,700 short tons when loaded to 20 feet and 24,600 tons when loaded to 22 feet, 6 inches. It can unload cargo at the rate of one gross ton per second.

In volume, sand and gravel rank next to stone, nearly 5,000,000 tons being carried each year, most of it being moved but a few miles to its destination. The material is pumped from the bottoms of the Lakes through steel pipes, operated by centrifugal pumps. By means of screens and cover plates the sand and the desired size of gravel are discharged into the hold while the residue is carried over the side or through spillways in the bottom of the ship.

There is romance even in this sand—Chicago's beautiful lake front was built from it.

Chapter Twenty-two

RED LANTERNS, ONE ABOVE THE OTHER, AND BETWEEN —A WHITE LANTERN

THE story of an industrial development is written between the figures of 1855, when 1,414 tons of coal went through the canal at Sault Ste Marie, and the figures of 1929, when 39,383,842 tons were carried on the ships of the Lakes.

To prevent congestion in that heavy tonnage great care is taken at the lake ports to coordinate rail and vessel transfer. At the ports the coal is set out on tracks, all efforts being directed against the arrival of the vessels so as to facilitate the loading process and to reduce car retention to the minimum.

In unloading the forces of gravity are employed in rolling the cars to a pit where they are connected to a cable which draws them to the dumper platform. Here the car—and, in some ports, two cars—is clamped to a cradle, raised, and turned over, the contents falling into a dumping pan and from there through a telescopic chute into the hold of the ship. The empty car is revolved back to its normal position, lowered to the tracks and is pushed out of the way by the next car, already in position. The empty car rolls down an incline to what is called the "kick back" and is shunted into the yard, gravity again being used.

When the coal is carried in box cars an unloader, called a "rocking cradle," upends the car after the door

has been opened, the ends being tilted alternately. A "reciprocating scraper" enters through the door to prevent the coal from sliding to the opposite end when the car is tilted. The coal is forced into the dumping pan and then into the telescopic chute into the ship.

A car is emptied in a minute and a half.

In 1871, when the first cargo of coal was taken to Duluth, the fuel was removed by hand and wheelbarrows. Because of difficulty in handling few ships carried the cargo but in 1878 the Northwestern Fuel Company, of Superior, built a dock equipped with a special kind of derrick, utilizing a small steam hoisting engine. In the late eighties a shovel bucket was developed and later clamshell buckets began to replace the old style tubs. In 1901 the first electric coal handling plant ever installed was put to work in the Duluth-Superior harbor.

It is not surprising to know that Alexander Brown, who had done so much for the quick and easy handling of iron ore at the ports of the lower lakes, should be among those contributing to the solving of the problem of unloading coal in the ports of the upper lakes.

Great cities of today, such as Chicago, Detroit, and Cleveland, were not so great when coal first went to Lake Superior. Chicago, scarcely reaching 100,000, ranked far below New Orleans and Cincinnati; Detroit and Cleveland, each less than 45,000, were trailing Providence, R. I., and Rochester, N. Y., and were little larger than Richmond, Va. The combination of iron, coal, and cheap transportation has made these cities what they are . . . and will make them what they are to be.

There were groups of men, in partnership and singly, who recognized the geographical advantages in the formative period. The partners in Pickands, Mather & Co.

early recognized those advantages and gathered in iron mines, ships, docks, coal, mills, and furnaces. M. A. Bradley used to tell his sons:

"Four things make for a successful combination on these Lakes—iron, ships, coal, and furnaces."

W. P. Snyder, in Pittsburgh, knew it would come. Marcus A. Hanna and his brother, Leonard P. Hanna, foresaw the future back in the early eighties. With them coal mines were first, then ships, then docks, then iron ore, and then furnaces.

The properties of M. A. Hanna & Co. now include iron ore lands along all the Superior ranges and it is estimated there are 150,000,000 tons of iron in their leases; there are bituminous and anthracite coal lands in Pennsylvania, Ohio, and Virginia, docks in different cities, two blast furnaces in Detroit and six in Buffalo, and ten ships with a total tonnage of 106,000. Marcus A. Hanna, in addition to creating governmental policies of national and international importance as a member of the United States Senate from Ohio—and in addition to being an individual force largely responsible for the building of the Panama canal—was a capable business executive.

His political enemies in caricaturing him plastered his clothes with dollar signs because it was the popular thing to do—it was an era when it was considered unrighteous to possess, let us say, a million dollars and all who became custodians of such sums were viewed not with suspicion alone but with genuine alarm. Fortunately, a nation has come to the sane idea that a man can become wealthy and, usually, does so because of righteousness in the handling of his own, as well as the property of others.

It is not a new notion in business that "honesty is the

best policy." That homely thought had caught on years before the Hanna brothers started their ships and their docks but it is only in recent years that there has come to be a public acceptance of the fact that such a rule must prevail in a business to become, and remain, successful.

Marcus A. Hanna and Leonard P. Hanna, and those who have followed in carrying on what the brothers started, will not soon be forgotten for what they have done in building a great industrial development.

They were among the early builders of 600-foot ships, bringing out the *E. Y. Townsend* and *D. J. Morrell* in 1906, and this period from 1904 until 1912 was notable for the development of the large bulk carrier. The average iron ore cargo in 1895 was 1,800 tons; in 1912 it was 7,740 tons, and in another year, with all the safety measures that could be devised, even these huge steamers were not strong enough to ride the storm that came roaring down from Superior.

At noon on November 7, 1913, in ports along Superior, white pennants above square red flags, with black centers, were slapping in the wind above United States Weather Bureau offices. Word of an impending northwest storm was carried to the docks and captains swore a little as hatches were battened down and tightly clamped.

"Let's go," they roared, and lines were cast loose as ships turned from the ore docks for the open sea.

As the afternoon lengthened into darkness lighted lanterns replaced the flags above the Weather Bureau offices. But instead of white lanterns above red ones, carrying the word that the storm was still a nor'wester, there were red lanterns, one above the other, with a white lantern between—it was a warning seldom seen on the Lakes . . . . it presaged a hurricane.

The wind, blowing fifty miles an hour, was driving in with a blasting blanket of snow. Ships held to their docks while captains anxiously scanned reports from government offices and thought of other ships that had put out a few hours before and now were tumbling through the green, white-streaked waves of deep water.

One of those that had gone was the steamer *L. C. Waldo*, carrying a cargo of iron ore for Cleveland. She had left Two Harbors, Minn., and while she was not a large ship—a carrier of 4,460 gross tons—she was staunchly built and carried a crew of twenty-four, including two women.

Late in the afternoon the wind and snow caught her, driving the heavy waves over her bow, raking her decks and leaving them sheeted in ice. Calling down the speaking tube to the engine room, Captain John Duddleson asked:

"How is everything?"

"O. K.," answered the engineer. "How's the weather?"

"Bad, and getting worse."

"Keep her checked."

"Yes, sir."

At nine o'clock the pilot house windows were caked with ice. The captain was steering by compass, alone.

At midnight there came a lull of just a moment, then a wild shriek of the winds, the piling up of a mountainous wave and the pilot house was swiped from its fastenings and crumpled like a match box in the fingers of a giant. The captain and wheelsman, leaping for a hatchway, were caught in the backwash of the wave but iron fingers fastened to the sides and held on. In an instant all was changed. The pilot house was gone. The compass

was with it. The electric light plant was out of commission. The ship was in darkness. Rolling helplessly in the seas. The wheelsman, shivering from fright and cold, heard Captain Duddleson's voice—a strange voice, toneless and far away:

"Get a compass from one of the ship's boats and bring it to the deckhouse fo'ard."

Making his way across an ice-covered deck the wheelsman returned with the compass. They set it on a stool and by the light of a lantern watched it while with an auxiliary wheel they strove to make their way to the shelter of Manitou Island.

One hour passed—two hours—three . . . and at four o'clock the storm mocked them no longer. Gathering just a little more of its strength it smashed down on the ship, ripping apart its steering gear. Helpless now the *Waldo* wallowed in the boiling seas to roll along and suddenly shudder as it settled down on Gull Rock, on Manitou Island.

Staring bleakly at the shattered boat, Captain Dunnelson was snapping orders to lash everything fast when the forward deckhouse went over the side to be ground to bits by the waves and rocks. Another few minutes of horror as life rafts and life boats were swept away and the captain summoned the engine crew on deck. Not much too soon. Her bottom resting on the rocks, the sea and wind pressing down, the sturdy ship broke in two, as though she were a toy ship of paper instead of an engineering model in steel.

Through the next two days the crew tore everything that was wooden from its fastenings that fires might be kept burning in an improvised stove that had been built

from a bathtub. Food was getting low until all that remained were two cans of tomatoes.

"These are for the women," ordered the captain, and not a dissenting murmur went up.

Another day and the freighter *Lakeland* sighted the *Waldo* but could not get near enough to help. The *Lakeland* was equipped with wireless and signals flashed out to be answered.

At daybreak, the following morning, the tug *Hebard*, with Captain Thomas H. McCormick, of the Portage station of the United States Coast Guard Service, reached the *Waldo*, its sides coated with ice and rising like a phantom ship in the tug's searchlight. From another direction came a second tug with Keeper Charles A. Tucker, of the Eagle Harbor Coast Guards and, together, the two boats and their crews fought the whipping seas.

Finally they got lines aboard and the rescuers, caked with ice, took away the crew.

Today there are similar letters hanging in the life guard stations at Eagle Harbor and Portage. They read:

"There is transmitted herewith a gold medal of honor, awarded to you by this department under Acts of Congress, May 4, 1882, in recognition of your heroic conduct upon the occasion of the rescue of the crew of the steamer *L. C. Waldo*, which went ashore on Manitou Island, Lake Superior, during the great storm of November 8-11, 1913.

"It affords the department great pleasure to have this opportunity to commend the services rendered by you at that time.

"Respectfully,
"Byron R. Newton.
"Asst. Sec. Treasury Dept."

The storm struck with even greater violence on Lake Huron where the wind, shifting and roaring, blew at a rate of more than a hundred miles an hour, gathering in and tossing aside ships and cargoes and men. Death was everywhere. Ships brought to the Lakes from Scotland and built to fight their way across the North and Baltic seas, went down like all the rest. There were two belonging to a Canadian fleet. The *Charles S. Price*, a 10,000-ton steamer, overturned and for several days floated bottom-side up while rescuers tried to identify her.

What happened to the *Price* remains a mystery. Her crew was lost and, a hopeless wreck, she finally sank and lies buried under shifting sands. There is only conjecture—plausible conjecture—that she collided with the Canadian steamer *Regina.* Each was seen making heavy headway and not far apart. All on board the *Regina* were drowned and sailors from the *Price* were found with *Regina* life belts about their frozen bodies.

Through nights of black uncertainty shipowners fought for every shred of information and when it was all over, and the final reckoning made, it was found that ten bulk freighters were totally lost, six more were wrecked so badly that they were given to the underwriters as constructive losses . . . and 244 men and women were dead.

To tell all the deeds of heroism would be to repeat the bravery of McCormick and Tucker, of the Coast Guards. But the chapter cannot be closed without tribute to the captains and crews of the tugs of the Great Lakes Towing Company. Sturdy, powerful little ships and with gallant men aboard they went everywhere. Buried under tons of water but shaking themselves loose they drove ahead—often slowly but always stubbornly into the waves, the snow, and the wind to where huge freighters,

with their waiting, watching, and praying crews, were foundering.

Only cool skillfulness of handling kept the tugs from being broken against the steel flanks of the ships they came to save. But they got lines aboard. Then with hoarse, throaty coughs of seeming exultation and encouragement, their engines would pull away dragging the cargo monsters out of the trough of the seas and to safety.

It was while shipyards were still repairing vessels battered by the storm and building others to replace those which had been lost that another storm—this time a different one, War—came to the Lakes.

Germany, France, Austria-Hungary, England—a dozen nations were soon involved and England, mindful of her dependence upon ships, came to the builders. In the Detroit office of Merton E. Farr, former president of the American Ship Building Company, there is a letter from the Cunard Steamship Company which tells what one of the shipyards did in response to the plea of the British; it will serve as an indication of how they all worked.

It is dated December 24, 1917, and explains itself:

"I understand that in connection with an inquiry that is being made into shipbuilding facilities you would like a letter from me stating what the relations have been between your company and ours, and it gives me the greatest possible pleasure to say that amongst all the shipbuilders we met in the course of carrying out our buying programme in the early part of this year there was not one of them that was more helpful than yourself in the great work that we had in hand.

"Furthermore, the reports of our inspectors have uniformly been to the effect that the work done in your yards

has been first class, and that vessels can be built at your plants in a very creditably short space of time.

"Up to the time when our direct relations were effected by the Government's requisition order, we had received four steamers, the 'War Patrol,' 'War Cross,' 'War Major,' and 'War Tune.'

"The first steamer's contract date was April 30th and she was delivered on April 21st.

"The 'War Cross' contract date was April 15th and she was delivered on April 16th.

"The 'War Major's' contract date was June 30th and she was delivered June 4th.

"One further steamer, the 'War Song,' we were permitted to take delivery of because she was finished when the requisition order was issued. Her contract delivery date was September 15th and she was delivered to the United States Shipping Board on August 6th, and released to us October 5th. This boat was the first, therefore, actually to come into our possession after the contract delivery date, and as you will see this was occasioned by an interval of practically two months between the time you delivered the boat to the Board and the Board released her to us. All of that time we had captain, officers and engineers on the ground and a cargo all arranged for her, but presumably it took all of this time for the Board to decide whether they would or would not release the boat to us.

"Following the 'War Song' I understand several vessels have been delivered to the U. S. Shipping Board under our contracts, including many that were not contracted for delivery before next open water, and I have to congratulate you on this very good result.

"I always felt from the beginning that you appreciated

the urgent need for producing tonnage to a greater extent than did most of the people on this side, and your success speeding up is certainly to be highly commended.

"Very truly yours,

"T. Ashley Sparks."

How these shipbuilders along the Lakes kept the faith during the war is more than a story of patriotism—it is a story of achievement welded by unselfishness.

Chapter Twenty-three

A STORY OF PATRIOTISM, GENEROSITY, AND ACCOMPLISHMENT

It was in a quiet office in Washington in October, 1918—that is, quiet for the moment but through it had flowed all the hurrah and all the seriousness of the business of carrying on the war. Sitting on one side of the desk was Edward Hurley, Chairman of the United States Shipping Board. Opposite him was Mr. Farr. Mr. Farr was talking:

"You know, of course, what we have done," he was saying. "We have built ships—a great many of them. We have met the demands. Now, Mr. Hurley, there is something else:

"More than a year ago, at a meeting of the directors and stockholders of the American Ship Building Company it was unanimously decided that our profit should be limited to ten per cent. In the beginning we found it impossible to know costs. So many unusual conditions had to be considered and there were so many contingencies we could not foresee that had to be taken into account that a long time passed before we came to know what ships were costing us.

"We now know, pretty accurately, and instead of completing our contracts on a lump sum, per ship, as fixed by the Government, we are submitting cost sheets and adding to them the amount of profit agreed upon among ourselves."

Mr. Hurley scanned some figures. "But that is much less than the Government has contracted to pay," he exclaimed.

"I know."

Behind that meeting between two men lies a story of generosity and patriotism the like of which is not easily found.

When war came to the United States it found shipyards along the Lakes prepared for immediate construction. But such was the confusion in official Washington that no one was empowered—leastways, no one was willing—with the responsibility to sign contracts for necessary vessels. Mr. Farr finally appealed to Admiral Capps, representing the Fleet Corporation:

"Admiral, if you will release material the Government has requisitioned we will build ten ships on our own account and without a contract."

The naval officer hesitated. Mr. Farr pleaded. Finally, in August, a priority order was signed. The material was released to the shipyards and the finished product came out. It was not until late in November that Mr. Farr was summoned to Washington to receive the protection of a contract and to sign another for the building of forty more vessels. The price on each was fixed. The amount was approximately $35,000,000. Up to that time it was the largest contract ever signed by representatives of the Government of the United States for ships.

In January, 1918, another contract was made calling for sixty-six ships and in the spring of the same year Charles M. Schwab rushed to Cleveland and at a meeting of lake shipbuilders demanded that they add 150 ships to the number already undertaken. Of this total the American Ship Building Company agreed to build sixty—a

total of 176 vessels to be turned out by one company. Altogether, on the Lakes, 432 steel, seagoing cargo ships of about 1,700,000 dead weight tons were completed and sent to sea.

The plans for these ships were worked out and in order to develop maximum tonnage, within the limits imposed by the canals, a type of 4,200 d.w.t. was developed. Later another type of ship, with 4,050 d.w.t. was developed and built.

It may be interesting to know that the story of those ships is being told, publicly, for the first time.

When the Fleet Corporation issued its requisitioning order on August 3, 1917, there were under construction, in various yards along the Lakes, 106 vessels, all but seven of which were for ocean service and most of them were for other countries. The mentioned seven were for service on the Lakes. These seven ships were released to their owners but not until some persons in Washington had been convinced that it was difficult to take a 550x58 foot ship through a 260x45 canal lock in order to get it into Lake Ontario from where it could go down the St. Lawrence river and into the Atlantic.

The first delivery to the Fleet Corporation was made from the yards of the American Ship Building Company, in Chicago, in August, 1917. Winter was less than three months away. From Washington came a plea to rush the ships being built before ice and snow blockaded the channels of the St. Lawrence. A conference was called by those in charge of the Lakes District for the Shipping Board and shipbuilders, already working night and day, left the meeting with a promise to do the "impossible."

"We will complete the twenty-seven vessels your survey requests," they agreed.

From nine yards ships were sent out across the Lakes and down the rivers to the sea. The last ten were delivered in November when the St. Lawrence was already closed to ordinary navigation. They broke their way through the ice, rode the storms, and went into the Atlantic. But not until their crews had defied more than the laws of the wind and snow.

When the ships were ready the Division of Operations of the Shipping Board was not in a position to handle the tonnage, so the Construction Division of the same board assumed the risk, rather than leave the vessels tied up in the Lakes through the winter. The ships were given a revenue cargo of coal to Montreal and from there, excepting those assigned to the Army or Navy, were loaded with another revenue cargo—this time of pulp wood—for New England ports.

"Often, our work seemed hopeless," recalled Henry Penton, manager of the Great Lakes district for the Emergency Fleet Corporation. "It would have been so but for the tireless co-operation of our Canadian friends. The last ship to get through for the year was one from Lake Superior, where she had been accepted on November 19, and then loaded with flour, at Duluth, to the limit of her available draft, for France.

"No acceptance was given from December to March, inclusive, the Corporation holding itself not bound by the terms of the original contracts as to deliveries during the closed season. This was an unwise policy at a critical time when the builders, whose goodwill and co-operation were vital, were in urgent need of their acceptance payments."

Nor, excepting in a few cases, did the Fleet Corporation change this policy.

A good many things were done that, probably, were not according to the rules and regulations of the Fleet Corporation. However, to these shipbuilders the important thing seemed to be to send out sound, seaworthy, dependable ships and to do that they had to cut the red tape of officialdom. Boilers and engines were shifted around from one plant to another and between different builders. On one occasion, at least, a couple of boilers belonging to a private individual were commandeered and fitted into a waiting ship, with the owner giving his consent after discovering where his property had gone.

Chronometers could always be found in Canada even when there were none available in the United States so the ships, when passing Montreal, would take them aboard. The Canadians also helped in delivering compensating binnacles so there were no delays because of a shortage of this necessary ship equipment. With a long trip ahead it was not always found necessary to add the final coat of paint—in these instances paint was put aboard and the vessel left the yards.

Many ships were accepted before they were complete, technically speaking, in order to save what was most needed—Time. For illustration, a ship built in a Lake Superior yards might be in need of minor equipment not on hand, and not convenient to find, quickly. Instead of useless delay she would be accepted and sent to an Erie yards and outfitted for the remainder of the trip to the ocean.

"However, it is no more than just to say that never, under any circumstances, was any substitution or shift of program undertaken without the full knowledge and approval of the district office of the Fleet Corporation," declared Mr. Penton. "We were of the opinion that the

ship was more useful and were willing to take our chances with the records. So long as the ship functioned satisfactorily, and we were able to avoid complications with auditors, we were content.

"Standardization of many details of construction, equipment and fittings had been promoted and encouraged by the district office on earlier accounts and cordially supported by the builders through the fullest exchange of information among the yards and inspection force. In effect, the district pooled its resources throughout the entire program. The saving to the Fleet Corporation in time and labor in examination and approval of plans was, by itself, enormous and lifted a heavy burden from the office and field staff.

"The attitude of the district office as to examination and approval was quite frankly tolerant. It was not thought that the duty was intended to be critical but rather formal and not repressive. Such details as fell within the jurisdiction of the classification bodies were joyfully left to them, not only to avoid the work but also to avoid crossing of wires.

"The whole program came near to being put on what we have come to know as a 'production basis.' "

Consistently the shipyards were ahead of contract delivery dates. Beginning with the spring of 1918 and through to the end the builders delivered their ships an average of fifty-four days ahead of contract delivery schedule dates. A remarkable record in itself but not so remarkable as the average delivery of the American Ship Building Company which was eighty-two days in advance of scheduled dates.

In Numbers of Ships Built the District of the Lakes Made the Greatest Contribution of All.

IN EMPLOYMENT ITS FORCES WERE THE SMALLEST. ITS PAY RATES WERE THE HIGHEST. RIVETS DRIVEN PER INSPECTION EQUALED THE SUM OF THE TWO NEXT HIGHEST DIVISIONS IN THE COUNTRY. THE COST PER SHIP, AND PER TON, WAS THE LOWEST.

These costs were what Merton E. Farr was recalling to Mr. Hurley on that day in October, 1918. Mr. Farr had already explained the action of his stockholders and his board of directors in limiting profits to 10 per cent. And in spite of the fixing of a definite price by the Fleet Corporation—a price of $152,000,000 for 176 vessels—the shipbuilder from the Lakes was there voluntarily to lower it.

To this amount—

"$131,000,000."

On that day Mr. Farr signed a contract stipulating the price and insisting on certain paragraphs in the document, these paragraphs reading:

"Whereas, the uncertain and rapidly increasing cost of building ships, due to variable prices of labor and materials, and to many other factors growing out of the war emergency, made it impossible at the time said contracts were made, and still make it difficult, to determine or even estimate closely the cost of construction of said ships; and

"Whereas, it was, and at all times has been the intention and purpose of the Contractor, declared through its President before any of said contracts were entered into, that, notwithstanding such agreed fixed prices for said ships, the Contractor would make and retain only a reasonable profit thereon, which said intention was subsequently approved by appropriate action of the Con-

tractor's board of directors, and finally confirmed by resolution of its stockholders; and

"Whereas, in view of the existing war emergency and for the purpose of increasing, with the greatest expedition, the capacity of its plants by making alterations and providing extra ways, equipment and facilities so that it might deliver to the Owner the largely increased tonnages provided for in said contracts, the Contractor has expended, and is expending, large sums of money for such alterations and expansions which will be of little or no value to the Contractor after the completion of said contracts, a large part of which expenditures have been and are being made under requirement, or at the instance of the Owner, and all of which are for the sole purpose of facilitating the prompt production of the ships so contracted for and constitute a part of the cost to the Contractor for the construction of such ships."

What happened afterwards adds piquancy to the story.

Throughout his negotiations with Admiral Capps and with others representing the government, Mr. Farr had never failed to point out that additional plant equipment would be useless to the company with the cessation of hostilities. More than useless, it would be an expense because of taxes, upkeep and other costs attendant on its keep.

Ten years after the war the company finally convinced another branch of the government—the Treasury Department—that it was entitled to a fair adjustment on useless equipment, a consideration that had always been understood with the Shipping Board. Nor, was this all. Referring again to a discussion led by Henry Penton, before the Society of Naval Architects and Marine Engineers, in the early winter of 1929, we find Mr. Penton saying:

"There were no cancellations of requisitioned ships in the district. In the published records of the Fleet Corporation seven are reported cancelled, but this is misleading since those were the ships built for lake service, and too large to pass the canals.

"In contract for steel ships there were cancelled thirteen ships of 52,650 d.w.t., or three percent by number and nearly four percent by tonnage of the district program. This compares with twenty-two percent by number and twenty-six percent by tonnage for the balance of the national steel program.

"Simple justice demands that attention be called to an error in the records of the Corporation which is misleading, if not actual misrepresentation. In the report of the Vice President, April, 1919, there is shown an item of $4,500,000, as 'contribution to the American Ship Building Company, the principal builder in the district.'

"This statement is without the slightest foundation. To the direct contrary there should be shown a contribution by the company to the Corporation of around $16,000,000.

"The facts are, and should be made known, that the company, when it became evident that by reason of expanded facilities and intensive production its profits were going to exceed its estimates, agreed by voluntary resolution of its board of directors, and stockholders, and without any suggestion or request, as I was fully informed at the time, to limit its profits to ten percent. It proposed a re-writing on that basis, stipulating, however, a reservation of $4,500,000 for amortization and demobilization of emergency plant extension.

"The actual settlement involved a surrender of about $21,000,000 of profits based upon its contract prices or,

with the reservation referred to of about $16,000,000. As a matter of fact, the reservation, as it proved, did not go half way in its intended purpose.

"The Corporation records make no mention of this voluntary action by the company, but do cause it to appear that the revised contract was at the instance of the Corporation and infer that it was the outgrowth of proposed cancellations, which is far from the fact, since the offer not only antedated the cancellation program, but the Armistice itself. In the end this contractor emerged from its war experience with actual earnings on its corporation business, after liquidating of taxes, etc., of about two percent. . . .

"You already know the action of the principal builder of ships along the Lakes, with regard to profits. Of the other six companies engaged on cargo ship construction, three passed out with the winding up of the program and with practically nothing but the salvage value of their plants; two of the remaining plants had to be sold to establish tax values and brought prices substantially less than the amounts expended for extension only to meet the Fleet Corporation's appeal. They were subsequently reorganized and continue in business. The years since have been a continual effort to rebuild the wrecked structures. The builders of the Great Lakes have more reasons than a horror of war for helping for continued peace.

"Time has taken a heavy toll of the principal characters in the war picture of the Lakes. Five of the leaders of a little band have passed on."

Through it all the cargo carriers kept to their contracts in bringing down food, iron ore, copper, and all the other necessities of a nation at war. Nearly 3,000 naval

reservists were trained on the bulk freighters. Henry Ford was making submarine chasers at his plant in Springwells. There was never a hitch—in building ships, in training men, in the mines, on the docks, in the mills or among the shipowners themselves, many of whom were drafted away from their own businesses and to the service of their government.

It is remarkable that the tonnage did not fall away because many ships were taken from the Lakes for ocean transport. Some, too large to go through the canals, were cut in two at Buffalo and sent down to Montreal to be reassembled. Several necessary men, such as G. A. Tomlinson—who became Director of the Inland Waterways Division of the Railroad Administration—were called to government service. Those left worked harder and faster.

The 1917 records through the canals at Sault Ste Marie —there were now three of them on the American side and one on the Canadian, with a fourth American lock to be completed within a few more years—show:

Total passages: 22,885; net registered tonnage, 65,307,-233; passengers, 38,339; coal, 18,298,853 tons; flour, 8,449,949 barrels; wheat, 185,899,449 bushels; grain, other than wheat, 67,415,795 bushels; manufactured and pig iron, 102,082 tons; salt, 84,656 tons; copper, 118,812 tons; iron ore, 61,374,000 tons; lumber, 350,609,000 feet; silver ore and bullion, 262,489 tons; stone, 571,001 tons; general merchandise, 658,365 tons; total freight, 89,813,-898 tons.

In 1918:

Total passages, 20,610; net registered tonnage, 61,100,-244; passengers, 34,990; coal, 17,981,610 tons; flour 8,228,844 barrels; wheat, 122,718,146 bushels; grain, other than wheat, 30,800,621 bushels; manufactured and

pig iron, 38,767 tons; salt, 81,007 tons; copper, 86,078 tons; iron ore, 60,551,296 tons; lumber, 296,919,000 feet; silver ore and bullion, 334,134 tons; stone, 402,009 tons; general merchandise, 494,437 tons; total freight, 85,680,-327 tons.

Chapter Twenty-four

"THE ONLY DURABLE THINGS ARE THE INTANGIBLE ONES"

MUCH of what has been accomplished has been made possible because of an organization known as the Lake Carriers' Association. This organization, which includes practically all the vessel owners on the Lakes grew out of a suggestion passed across a luncheon table, in 1902, by M. A. Bradley to James Corrigan.

The two men had been exchanging confidences on individual difficulties as vessel owners when Mr. Bradley observed:

"You know, Jim, the day when a shipowner was a law unto himself has passed. Instead of individual ownership of one, two or a half dozen vessels, this business of cargo carrying is to be a proposition for big fleets—bigger fleets, even, than the one my father put together."

"True enough," returned Mr. Corrigan, "but what are we going to do about it?"

"Organize."

" 'Organize'? Organize what?"

"An association of vessel owners."

"We already have one."

"I know. A small group of Cleveland and Buffalo shipowners. What I am thinking about is an organization of all the fleets and all the owners—everywhere on the Lakes."

"It's been tried," objected Corrigan.

"Let's try again."

"What have we got to offer?"

"By getting together in one organization we are offering a solid front and a powerful combination of interests," answered Mr. Bradley. "A lot of improvements must be made on these Lakes before they will be navigable to the commerce that is coming. We need deeper channels and more canals because vessels are getting larger. I know of no better way for influencing public opinion and government officials into a realization of our needs—present and future—than by getting together in a body that will be strong enough to get recognition."

"I didn't expect that answer," returned Mr. Corrigan. "What is the inducement we can hold out to bring in men from all over the Lakes?"

"The inducement of improvements for this great waterway is sufficient to interest everyone."

A few days later the men again met. Each had sounded out friends and each had found a response. A meeting was called and the interests of the Cleveland and Buffalo vessel owners were merged into the greater organization which included shipowners all the way to Duluth. In 1893 M. A. Bradley had helped to form and had been the first president of the Cleveland association; now, though preparing to leave the Lakes under the terms of his father's will, his mind was still on the problems of vessel owners.

Officers and directors were named:

President, William Livingstone, Detroit; vice president, J. H. Sheadle, Cleveland; Treasurer, Captain George P. McKay, Cleveland; Secretary, Harvey L. Brown, Buffalo; Counsel, Harvey D. Goulder, Cleveland. Directors: A. B. Wolvin, Duluth; W. C. McMillan, De-

troit; James Corrigan, Cleveland; Harry Coulby, Cleveland; Frank J. Firth, Philadelphia; Charles A. Eddy, Bay City; C. W. Elphicke, Chicago; Dennis Sulliven, Chicago; David Vance, Milwaukee; Edward Smith, Buffalo; T. T. Morford, Buffalo; D. G. Kerr, Pittsburgh; W. W. Smith, Cleveland; H. A. Hawgood, Cleveland; John Mitchell, Cleveland; T. F. Newman, Cleveland; George P. McKay, Cleveland; William Livingstone, Detroit; J. E. Upson, Cleveland, and Harvey D. Goulder, Cleveland.

Fleets totaling 608 vessels were brought together and the total tonnage was 1,390,027. It was February, 1903.

In addition to attracting national attention to the commercial importance of these waterways and federal action for the constant improvement of them, the Association, within a few years, found another job ——

Changing working conditions for labor.

For years before and for several years after the organization of the Association the Seaman's Union really was in control of the Lakes for it controlled the crews of the ships. While having no objections to unionized labor, as such, members of the Association, many of whom had worked up from decks to ship ownership, did see great dangers in a condition that was growing beyond control. To quote from one of the reports of 1907:

"Complaints are coming in from masters and mates in the deck department and from engineers in their departments, of inability to have the business of the ship conducted excepting on rigid lines, either of contract or of union regulation; that the discipline of the ships is often dissipated by consideration of the precise terms of contract made in advance as to what men shall be called upon in given cases; and that the real business essential to the safety of the ships and due performance of

their business is subordinated by technical questions of contract as interpreted by the unions or by the individual members of the crews, whose contentions are generally and almost as a matter of course sustained by the unions."

One of those to whom the dangers were apparent was Harry Coulby, who had received some of his education in the ways of life as a sailor on an oyster lugger in Chesapeake Bay. His language was quite as forceful and as picturesque as any sailor's and much against the wishes of his associates in Pickands, Mather & Co., as well as in the Association—all of whom feared for his personal safety—he took it upon himself to go to the seamen and talk to them, where they were.

Saloons on dimly-lighted streets along Cleveland's waterfront came to know this man; in boarding houses and flop joints where sailors idled their shore leave, he was known. Harry Coulby knew his was the dangerous course; he knew, too, it was the bold course and its boldness was what he depended upon for his safety. It might be well to understand that many lake sailors of those days were hard-bitten. Frequently they were the scum of the docks who would murder—not for dollars but for pennies. The story of one man who was a famous Michigan runner may add to an appreciation of the danger Harry Coulby was brushing aside.

"In 1907 I was working, through my college vacation, as a deckhand," related this former athlete. "We had put into Ashtabula and I had gone to a small store which was a combination saloon and newsstand to get some home town papers. I gave the proprietor a dollar bill. Carefully putting his big body between the cash register and some sailors sitting in back he handed me my change, holding it in his fist and whispering:

" 'You're a stranger around here, ain't you, kid?'

" 'Yes.'

" 'Well, shut your hand over this money.'

" 'Why?'

" 'There are bums here who will kill you for less than that.'

"I laughed. Put the change in my pocket, the papers under my arm and walked out. As I was going down the railroad tracks towards the dock I saw some one ahead of me. I thought it was a sailor and probably a member of my own crew but in the darkness I could not recognize him.

"I hurried so we could finish the walk together. Suddenly I saw two hands reach up from the inside of a coal car by which the stranger was walking. In them was a chunk of coal that must have weighed ten pounds, and it seemed bigger than that. Before I realized what was happening the coal crashed down and the stranger was in a heap. I let out a yell. Three or four forms came at me. I took to my heels. I cut across the tracks and down a narrow roadway. I made the ship's ladder and went up it to safety. Quick. I needed to."

It should not be inferred that the Seaman's Union was only a harbor for humanity's riff-raff. That would not be true. But, there is another statement, made before and equally as true—"frequently sailors were the scum of the docks who would murder." The Lakes were a pretty safe retreat for "wanted men" for they could move around, getting on a ship at one port and leaving at another, to the confusion of police. To meet them, and to talk with them, Harry Coulby had to take chances with all—honest men, and thieves, and murderers.

His fearlessness and his earnestness impressed them

and won them over—they came to believe what was true . . . he was a friend to them. He insisted, as he believed, that open shop conditions should prevail. He had no objections to unions—recognized their worth—but maintained the first requisite of sailing was safety for the ship, the crew, and the cargo. He proved this could not be where there was divergence of authority and in proving this he was holding forth the age-old tradition of the sea which recognizes the captain as the law of the ship.

In 1908 open shop conditions came to the Lakes, to stay through the years that have passed. There is still union labor on these boats but it is working side by side with non-union men.

The victory was almost a personal one for Harry Coulby.

He went further. He proposed various advantages for the sailors and his associates in the Lake Carriers' Association willingly consented. Assembly rooms were located in different cities about the Lakes. They serve as clubhouses for sailors and to get away from the notion of paternalism a small charge (one dollar a year for seamen and a slightly higher rate for officers) is made for the use of the magazines, books, newspapers, writing materials, and other conveniences. A savings plan was instituted and its method of operation permits deposits and withdrawals through the master of the ship.

It was difficult to influence sailors into the wisdom of saving their wages against the winter months when there was no work on the ships, or against the time when they would no longer follow the trade routes. Tradition of sailing had built up a practice of carrying, on the person, the savings of a season and too often these savings were lost through theft or to professional gamblers who fol-

lowed the freighting lines. There was—and is—no thought in the vessel owners' minds of compelling the seamen to save their money but the plan worked out with sympathetic banks, gave them the opportunity, if they wished it.

For a number of years the savings grew slowly. Then, as suspicions of the intentions of the shipowners disappeared, the plan grew. Today approximately $2,500,000 is on deposit in four banks and credited to the crews of some four or five hundred vessels.

In 1916 technical schools were organized with classes in Cleveland and Marine City. There are few such schools in the world. In it oilers and wheelsmen are coached in the subjects of engineering and navigation and their classes are supervised by steamboat officers. Examinations are under the supervision of the United States Steamboat Service.

In organizing these schools the Association recognized that men are created equal so far as having two legs, two arms, two eyes, and two ears are concerned but, otherwise, quite unequal. That fortune of birth has much to do with gaining an education, whether in engineering or medicine. Many of these men who follow the Lakes—perhaps a majority of them—have lacked the advantage of having gone through public schools. Years of sailing have given them practical knowledge and to that practical knowledge the schools are adding technical training. Facts are taught and then, no less, the application of the facts.

The late Judge Elbert H. Gary, Chairman of the Board of the United States Steel Corporation, once said: "Industry, after all, is nothing but the application of human knowledge." Being an important part of the industry

of this nation the Association is offering the advantages of technical training so that a greater future may be insured, that greater things may be accomplished by common thinking and uncommon effort.

The requirements for entrance into the schools are: For oilers, a service of thirty-six months in the engine department of a lake steamer; for wheelsmen, a service of two years in the deck department.

Starting with the idea of being helpful to the men for the helping of themselves, the schools have become a necessity. The fast-growing need for trained men in different departments has gone beyond the supply and of some five hundred students in the engineering classes, since organization, half have been advanced to the posts of chief engineer or first assistant engineer; of nearly four hundred in the navigation classes some one hundred thirty have won masters' or pilots' licenses.

In the Welfare plan there are insurance features, and so well have all these plans worked out that in the years of their effect there have been no fundamental changes in their principles.

Going further the Association sought to improve conditions at sea. Nowhere in ships on the waters of the world are sailors so well paid, so well fed and so well quartered as on these lake freighters. On different occasions the writer has eaten with the crews at their mess table and the food is not only of the best but is well cooked and well served. No first-class passenger on a fine ocean liner could have better food. He might have the choice of a greater variety. That would be all.

But fresh fruits, fresh vegetables, steaks, chops, fish, fowl, cereals, pies, cakes are on the regular menu and they form, or should, sufficient variety for anyone. There

are no swinging hammocks to sleep in but every member of the crew has a bed, with sheets and blankets. Wages range from $80 or $85 a month for a deckhand to $5,000 a year for a captain. Considering the sailor has practically no expenses for nine months in the year this minimum wage is better than almost twice that amount ashore where he would have to pay for food, lodging, transportation, and all the other drains that lead from a workingman's pocketbook.

Harry Coulby passed on in January, 1929, and, in all probability, in furthering these projects, he had no interest in helping men to make more money, or to possess sharper mental tools than their fellows. Having lived, and succeeded, he knew the real game of life has no such narrow boundaries. That instead of limitations its wideness is measured by improvement in men's minds which permits them to get jobs and then better jobs. His was the philosophy that the only durable things are the intangible ones—that not the job, but what the job represents, is important.

However, while bettering working conditions, members of the Association have never lost sight of another purpose for which it was formed—the improvement of channels. Because of intelligent representation of their problems the American and Canadian governments soon began closer cooperation in passing legislation favorable to the waterways.

Each year, in an appendix to the annual report of the executives of the Association, there are from eighty to one hundred pages set aside in which are recorded federal dredging projects, opening of canals, repairs to breakwaters, replacing of bridges, removal of obstruc-

tions from channels, elimination of dangerous shoals and other operations making for easier navigation.

One of the large projects which the American government carried through was the building of the Livingstone channel, in the Detroit river. It was an engineering undertaking of major importance. Prior to 1912, when the channel was opened, this stretch of the Detroit river was a dangerous strip for navigation. A slight slipping from the course meant jamming jagged rocks into steel bottoms while in foggy weather the lower river was nearly impassable. Costly blockades were frequent until the government put engineers to work cutting a channel through the solid rock. Years of blasting and digging were needed before the passage was ready. It was named after William Livingstone, president of the Lake Carriers' Association, in recognition of his—and their—efforts to get it built, and the first ship through was the *William Livingstone*, of the Tomlinson fleet.

The Association influenced the building of more canals at Sault Ste Marie; it was instrumental in bringing the Canadian government into the work of enlarging the Welland canal . . . there have been so many needed improvements the Association has supported.

In no way does the organization, strong as it is, attempt to dictate freight rates on the Lakes. That business is left to individual fleet owners. Nor does it interfere, in any other way, with the management of the ships. Its purposes are clearly defined—the improvement of waterways and working conditions.

It is an organization that is non-political yet intensely political when it sees the needs for improvements. Quite an exhaustive search of the records has been made by this writer without disclosing where any measure, other

than one for common welfare, was ever supported. And by "common welfare" is meant the welfare of people, everywhere. Improvements in these waterways have brought cheaper freight rates and these cheaper rates have been reflected, substantially, in the cost of produced goods. There is a temptation to carry the thought further.

Chapter Twenty-five

"THEY HAVE COME TO THESE LAKES AND THEY HAVE NOT LOOKED AWAY"

IRON. Coal. Ships. Men. These have been brought together along the Great Lakes. They have changed the economic pattern of American life. They will keep on changing it.

In 1855, the opening year of the canal at Sault Ste Marie, 1,447 tons of iron ore came down from the Marquette range and 1,414 tons of coal went up from the Eastern mines. In 1929, seventy-four years afterward, 65,204,600 tons of iron ore came down and 39,383,842 tons of coal went up. In 1855 no cargoes of wheat rested between the wooden ribs of schooners; in 1929, 225,421,703 bushels of the golden grain were transported from the plains of the Northwest. In 1855 total freight was 14,503 tons; in 1929 it was 92,619,031 tons.

Vessel tonnage through the locks in the first year totaled 106,295; in 1929 it was 68,240,279 and even this huge total is not a fair reckoning. Millions and millions of tons of lake vessels and cargoes travel from Erie, Ontario, and Huron into Lake Michigan, to Milwaukee and down to Chicago, without passing the crossroads at Sault Ste Marie.

You can understand that by referring to the movement in ore and coal, as recorded by the Ore & Coal Exchange, and the figures compiled at the Sault Ste Marie locks.

In 1929 the total movement of coal was 39,383,842 tons

against a recording of approximately 16,000,000 tons through the canals; the ore cargoes bulked into 65,204,600 in gross tons against 64,917,703 in short tons through the locks.

These developments have not come without bringing, with them, conditions of tremendous change.

You have seen how they have brought changes in the lives of men; how they have built large corporations and industries with their consequent imprint upon the homes of people; you have watched the greatest pageant of inland commerce in the world passing in parade; how waters, once clear for the canoe of the Indian have become streaked with the oil of trade; you have seen how cities of vital importance have been built and how bargaining has shifted from beads and furs to iron and coal and wheat.

It all traces back to those few barrels of ore sent by Peter White to Oglebay, Norton & Company, in Cleveland, in 1852. Four years later the superintendent of the Soo canal stared in astonishment as a schooner—the *Queen City*—nosed her way into the lock.

"Looks like you got all the iron there was in them mines. How much you carrying?" he cried.

"Three hundred and thirty-seven tons," proudly answered Captain James Stone, as he surveyed the heaps of iron piled on deck.

"Gosh! Guess that's the biggest load yet."

"No 'guessing' about it," roared Stone. "It is. They told me so at the Jackson mine."

The ore went to Erie, Pa., and four days were needed to unload it, the crew wheeling it in barrows to the dock.

Making about thirteen trips a season, the *Queen City*

carried down less than 4,500 tons of ore or about one-third of what the *Harry Coulby*, flagship of the Interlake Steamship Co., now carries in a single trip. It is understandable that those away from these waters and not familiar with the ships that ply them should have an inadequate appreciation of the size of cargoes carried, and of the ships themselves.

Translated, a train of 190 cars, each car containing seventy-five tons of coal, can be emptied into the holds of one of these vessels. It may be interesting, then, to give a description of a modern lake vessel and the *Harry Coulby* will be chosen.

At the time of her launching in 1925 the *Marine Review* carried this story:

"General particulars:

"Length, overall, in feet, 630.9; breadth, in feet, sixty-five; displacement, on twenty foot draft, in short tons, 21,380; capacity, cargo holds, 589,257 cubic feet; width of hatches, clear open, in feet, forty; width of hatches, inside coamings, in feet, forty-seven; number of cargo holds, four; number of double bottom tanks, seventeen.

"The vessel was built by the American Ship Building Company and on her maiden voyage carried a cargo of 14,650 tons of coal. She was built to the highest class in Lloyd's, and the American Bureau of Shipping for lake service. Some displacement aft was sacrificed when the lines of the hull were laid down in order to give the vessel an unusually clean and easy run to the propeller.

"In construction the vessel is a combination of the transverse and longitudinal systems. The bottom frames, tank top stiffeners, and spar deck beams run longitudinally and the side frames and hopper stiffeners run trans-

versely. Straight arches are used. This construction is used to give a tank top of much greater strength than is possible with the usual transverse method, and also to give better support to the spar deck stringers.

"In building the propelling machinery for this ship two points were kept especially in mind. One was to build it heavier than customary so that it could easily stand the heaviest service without danger of developing any weakness. The other was to give it unusual finish so that its fine appearance would be an additional incentive to the officers responsible for its operation to keep it in good condition.

"A single propeller is driven by one triple expansion steam engine with high, intermediate and low pressure cylinders of 25½, 41 and 67 inches diameter, respectively. The common stroke is forty-two inches, the engine developing 3,000 indicated horsepower at ninety-five revolutions per minute.

"The cylinders are arranged with the low pressure forward, the intermediate aft and the high pressure in the center. The intermediate and low pressure cylinders have steam admitted through double ported slide valves, while the high pressure cylinder takes steam in the center to a piston valve. All the valves are actuated by a link valve gear of the overhung type. Both intermediate and low pressure slide valves are fitted with assistant cylinders to overcome the weight of the valves and their inertia.

"All the main engine cylinders are steam jacketed both at the bottom and top heads, and the high pressure in addition has a jacketed liner in the barrel. Steam used or condensed in these jacekts is carried to traps and is discharged to the feed and filter tank in order to recover all the heat possible. A considerable conservation

of heat and a reduction in condensation is made possible by so steamed jacketing the cylinders.

"The main engine bed plate is of cast iron of the girder type and has four bearings of thirteen-and-one-quarter bore. It is supported at the center of the ship by a steel foundation and is fitted on cast iron blocks. The bed plate and foundation thus give a solid and rigid support to the engine. There are three back columns each carrying a slipper guide. There are four front columns of massive design. By this arrangement easy access is afforded to all bearings and connections. Connecting rods are an even nine feet from center to center with both connections to the bottom and boxes and wedge adjustments for the top end brasses. The crossheads are of cast steel, in this case polished all over for appearance.

"Throughout, the main engine is of massive design and the shafting and working parts are considerably above the requirements of Lloyd's and American Bureau. Piston rods and crosshead pins are unusually large and are made from special hard carbon steel of about 80,000 per square inch tensile strength. The crankshaft and the webs were forged from Lloyd's and American Bureau ingot steel requirements.

"A standard horseshoe type of thrust bearing is used so designed that the thrust is only twenty-nine pounds per square inch when the vessel's speed is twelve and three-quarters miles per hour. There are seven collars all water-cooled in center core. The thrust works in an oil bath which is cooled by water pipes. In addition to the oil bath two duplex pumps are provided, one of which is a standby, to maintain a pressure of from forty to sixty pounds per square inch on these collars.

"A surface condenser of 2,700 square feet cooling surface receives exhaust steam from the low pressure cylinder of the main engine. The air pump is of an air jet type, situated above the condenser. There are two of these pumps, each one equal to the necessary capacity for the condenser. The condensate pump of horizontal duplex type and seven-and-one-half by seven-and-one-half by six inches in size is located below and immediately under the condenser.

"The propeller is of cast steel and of sectional type with four blades. It is fifteen, three inches in diameter and is set at a pitch of fourteen feet, nine inches. The blades are all ground smooth and are adjustable in pitch, one foot either way. The stern tube is of heavy cast iron with a stern bearing of brass lined with lignum vitæ. The forward end is tapered to allow the removal of the propeller shaft.

"Forward of the engine room are located three marine type water tube boilers set fore and aft. The total heating surface of three boilers is 9,345 square feet and the superheater surface is seven hundred and fifty square feet. The boilers have been designed for superheat of fifty degrees Fahr., and a working pressure of 215 pounds per square inch. Four-inch tubes are used. A total of 191 square feet of grate surface is fitted with shaking grate bars. Induced draft is supplied by a fan driven by a double engine of the American Ship Building Company made, located above the breeching. No heating air is used.

"For mechanical ejection of ashes two five-inch ash guns of hydraulic type are used, one located on each side of the fire room. No boiler water purifiers are re-

quired as the Coulby is fitted with a surface condenser. In order to try to comply with regulations prohibiting the smoke nuisance the boilers have been fitted with patented smoke consumers of the instant flame type."

The quarters for the officers and crew are finer, in all likelihood, than on any ship sailing outside of these fresh waters. The engineers are housed on the afterdeck, forward of the bunkers. The firemen, coal passers, oilers, and cooks are quartered on the starboard side; there is a hospital there, too. The deck crew is located in quarters on the main deck, forward, while accommodations for deck officers are also located on this main deck. All are large, well-ventilated rooms while the captain's quarters consist of bedroom, office, and bath.

The guest passengers' quarters are equal to the finest suites on ocean liners. There are five staterooms and a private dining room. Each stateroom is fitted with a tiled bath while the rooms, themselves, are finished in tinted enamels. The dining room, on the starboard, is finished in Burmah teakwood in its natural state, rubbed down and waxed. The ceiling is of the beam type with built-in silver cabinets and an upholstered settee. The butler's pantry, finished in quartered oak, is located adjacent to the dining room.

A stairway leads up from the main passengers' lobby on the spar deck to the forecastle where there is a living room, immediately forward of the captain's suite. This living room is paneled in French walnut and has a beam ceiling, while on the deck above is located the guests' sun parlor. Access may be had to all guest rooms without going outside.

The modern lake freighter—and the *Harry Coulby* is only one of them—carries more cargo per cubic foot than any other type of vessel ever designed. They are full and flat and long, stretching out well beyond 600 feet. While they may not please the eye of the naval architect they are efficient in the work that is intended for them ——

Low cost transportation.

The ore fleets of the Lake Carriers' Association and their present tonnages are:

Company	Number of Vessels	Capacity per trip
Donner Steel Co.	1	8,900
Boland & Cornelius	17	139,800
Brown Steamship Co.	2	14,000
D. Sullivan & Co.	1	9,100
International Harvester Co.	1	9,800
J. S. Ashley	11	103,300
Becker Steamship Co.	5	35,800
Cleveland-Cliffs Iron Co.	20	155,700
Columbia Steamship Co.	10	90,700
General Transit Company	3	9,600
U. S. Steel Products Co.	4	10,000
Great Lakes Steamship Co.	19	144,300
Hutchinson & Company	22	190,500
Buckeye Steamship Co.	3	13,600
Interlake Steamship Co.	49	418,600
Interstate Steamship Co.	4	40,600
Jenkins Steamship Co.	5	35,900
Kinney Steamship Co.	5	42,600
Bethlehem Transportation Co.	16	159,400
R. J. Paisley, manager.	10	57,200
Shenango Furnace Co.	3	34,400
Pittsburgh Steamship Co.	84	709,600
Kinsman Transit Co.	5	46,500
G. A. Tomlinson	13	114,800
Wilson Transit Co.	11	89,500

John J. Barlum	2	16,900
Ford Motor Company	2	21,800
Mesaba Steamship Co.	1	6,800
Lake Tankers Corporation	1	4,000
Reiss Steamship Co.	10	76,800
	340	2,810,500

Freight carriers, aside from ore:

O. W. Blodgett	2	6,000
Boland & Cornelius	2	8,000
Brown Steamship Co.	1	2,500
Great Lakes Transit Corp.	22	92,600
D. Sullivan & Co.	7	23,800
General Transit Co.	1	900
Cleveland-Cliffs Iron Co.	1	5,500
R. J. Paisley, manager	3	15,800
Rockport Steamship Co.	2	14,500
G. A. Tomlinson	4	28,500
Huron Transportation Co.	3	15,900
Lake Ports Shipping & Navigation Co.	1	3,400
Wyandotte Transportation Co.	4	16,300
Canada Atlantic Transit Co.	2	8,800
Bradley Transportation Co.	6	59,450
Bison Steamship Co.	2	5,600
Jones Transportation Co.	1	2,700
Standard Oil Co., of Indiana.	5	23,500
Newaygo Tug Co.	1	5,900
	70	339,650

The Lake Carriers' Association includes between 85 and 90 per cent of the American-owned tonnage on the Lakes.

The fact that lake transportation is the cheapest and fastest in the world has had much to do with the growth of the United States. Formerly it cost $6 and $7, $8 and

$9 a ton to bring down iron ore; now it is brought down for less than 90 cents a ton. It costs less to deliver a ton of coal by rail from a Pennsylvania mine to Toledo, and from there by water to Duluth, than it does to deliver another ton of coal from the same Pennsylvania mine, by the same rails to the same Toledo.

Here is the explanation:

The rail rate from the mine to Toledo is $2.39 a ton. The rail rate to Toledo for "coal to the Lake" is $1.89. The rate from Toledo to Duluth, by water, is 35 cents a ton, making a total of $2.24 or a difference of 15 cents.

The Interstate Commerce Commission, seeking to balance industry as a national whole, instead of a localized development, has already ratified these rates and while they may appear out of line the equities in them have been determined over a number of years.

Three-fourths of all the ore used in the United States come from the Lake Superior district and were it not for these Lakes and their low cost transportation, there would be no way for handling the commerce they have built. Railroads could not do it and, if they could, the freight rate would be so high as to increase materially the selling price of finished products. How much is difficult to say but lake rates, roughly speaking, are about one-seventh those of railroads, per mile. A ton of coal is hauled from Toledo to Duluth for less money than a householder would have to pay to have it carried from the curbing in front of his home to his basement.

These savings in cost and in time are having a definite effect in the steel industry. It is something more than repeating a prophecy to say that in a future, perhaps not far away, a lake port will be the center of the industry.

Executives in the United States Steel Corporation saw that as far back as 1906 when two square miles of scrub oak Indiana land were bought by the corporation and the city of Gary was built. Cleveland has been growing as a steel center, and Detroit has received an impetus in this direction.

But, whether the steel industry—the center of it, of course—remains in Pittsburgh or goes to Chicago, Detroit, or Cleveland, the certainty also remains that it is an industry that will be fed from, and by, these Lakes. Iron is at one end. Coal is at the other. The two are inseparable. Their importance will remain. Every time a miner in the Superior district flings a shovelful of ore into a passing conveyor a farmer in California sinks a spade into the ground.

Trade on them has widened until ocean freighters now ride their swells; larger ocean carriers than those now seen will come with a further deepening of channels. From the Lakes men were looking eastward as long ago as 1850 when the brigantine *Minnesota*, built in Chicago and commanded by Captain John Prindiville, sailed up the St. Lawrence river with a cargo of copper from Georgian Bay to Swansea, Wales.

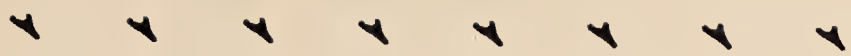
The *Minnesota* went on the rocks in the Lachine Rapids and no further attempts were made to reach the Atlantic until 1859 when Captain Albert R. Manning took the schooner *J. F. Warner*, loaded with barrel staves, from Cleveland to Glasgow. In 1873 Captain Prindiville, commanding the *Pamlico*, took the first cargo of grain when he loaded corn in Chicago for Liverpool.

The men who have come to these Lakes have not looked away. By their efforts, and the cooperation of friendly

governments living side by side, they have built a commerce the like of which is seen nowhere else in the world.

All, working together, have brought prosperity not to a few but to a great multitude of people.

..THE BOOK ENDS..



BIBLIOGRAPHY

Hennepin's, A New Discovery, Reuben Gold Thwaites, two volumes, A. C. McClurg & Co.

John Jacob Astor, Arthur D. Howden Smith, Lippincott.

The Honorable Peter White, Ralph D. Williams, Penton Publishing Co.

The Inside History of the Carnegie Steel Co., James Howard Bridge, Aldine Book Company.

The Marine Review, Cleveland.

History of the Great Lakes, J. E. Beers & Co., Chicago, in two volumes.

The Iron Ores of Lake Superior, Crowell & Murray, Cleveland.

St. Louis County Historical Society, Duluth, Minn.

Henry Clay Frick, George Harvey, Charles Scribner's Sons.

Volume 36, Society of Naval Architects and Marine Engineers.

Buffalo Historical Society.

Cleveland Public Library.

Autobiography of Andrew Carnegie, Andrew Carnegie, Houghton-Mifflin Company.

Skillings Mining Review, Duluth, Minn.

INDEX

A. Bradley, 151
Accommodation, 52
Acme Steamship Co., 230
A. Cobb, 151
Adams, John Quincy, 29
Agassiz, Alexander, 133
Agnew, David, 100
Agnew, J. F., 100
Alaska, 45
Albany, N. Y., 72, 83
Alden, Dr., 144
Algonquin, 59
Allen, Luther, 196
Amelia, 27
American Fur Co., 28, 72
  dissolved, 49
  founded, 42 *et seq.*
American Ship Building Co., 195, 198, 261, 264, 269
American Steel Barge Co., 184, 229
Andrews, Capt. J. H., 94
Ann, 76
Ann Arbor Railroad, 247
Arnold Transit Co., 246
Ashley, J. S., 294
Ashley & Dustin Co., 246
Astor, Heinrich, 38
Astor, John Jacob, 28
  inability to speak English well, 44
  story of success, 37 *et seq.*
Astor, William, 48
Atlantic Ocean, 223
Augustus B. Wolvin, 217
Australasia, 225

Babcock, W. I., 196
Baltimore, 60, 94
Barbour, James, 47
Barcelona, 53
Barclay, British naval officer, 29
Barlum, John J., 295
Barney, Ariel N., 68
Bayfield, Lieutenant, 58
Beaser, Captain, 95
Beasley, Norman, vii
Beauharnois, letter from, 33
Becker Steamship Co., 294
Belknap, Joseph, 125
Belmont, August, 83
Ben Franklin, 72
Berry, A. V., 67
Bessemer Steamship Co., 194, 198
Bethlehem Transportation Co., 294
Bibliography, 299
Bidwell & Banta, 118
Bison Steamship Co., 295
Black Ball Line, 118
Black Line, 153
Black Rock, N. Y., 27, 53
Blodgett, O. W., 295
Boer War, 212
Boland & Cornelius, 294, 295
Bothwell, J. D., 119
Bothwell & Ferris, 119
Bradbury, 245
Bradley, Alva, 115 *et seq.*
Bradley, Carl D., 250
Bradley, Morris A., contribution to history of the Lakes, 152 *et seq.*, 185, 255, 276
Bradley Transportation Co., 295
Bradstreet, General, 20
Breitung, Edward, 138
Bronson, Alvin, 28
Bronson & Crocker, 57
Bronson, Marshall & Co., 56
Brooks, John W., 80, 83, 84, 92
Brown, Alexander E., 202, 208, 228, 254
Brown, Fayette, 109, 157, 207, 209
Brown, Harvey H., 196, 202, 208 *et seq.*
Brown, Harvey L., 277
Brown, Capt. James, 57
Brown, W. L., 196
Browne, Robert, 39
Brownhelm, Ohio, 115
Brown Hoisting Machinery Co., 202
Brown Steamship Co., 294, 295
Bryant & Stratton Business College, 118
Buckeye Steamship Co., 294
Buffalo, N. Y., 27, 226
Buffalo Historical Society, 56
Burt, William A., 65, 81

Cadillac, Sieur de, 49
Caldwell, Captain, 97
Canada, 12
  ceded to English, 18
  cooperation, 267
  equipment from, 268
  grain territory, 224
  iron deposits in, 180
Canada Atlantic Transit Co., 295
Canadian National Railways, classification yard, 225 *et seq.*
Canadian Pacific Railroad, 224
Canal, reasons for New York ship, 217
Canfield, Col. Augustus, work on Soo Canal, 85 *et seq.*
Canton, fur exports to, 44
Capps, Admiral, 265
Card, Jonathan F., 154
Carl D. Bradley, 251
Carnegie, Andrew, 168, 187
  pessimism over ore mines, 187 *et seq.*
  rivalry with Rockefeller, 193 *et seq.*
Carnegie Steel Co., 241
Carp River, 68
Carr, Jim, 248 *et seq.*
Carr, Maggie, 248 *et seq.*
Carr, S. T., 66
Cartier, Jacques, 2, 32, 49, 52
Cass, Lewis, 31, 49, 103
Chamberlain & Martin, 151
Champlain, Samuel de, 17, 49
  on copper finding, 33
Champlain, Lake, 29
Chandler, J. H., 196
Chandler Iron Co., 207
Charles S. Price, 260
Chauvelin, M. de, 18
Chester, Professor, 136, 165
Chicago, 14, 226
  received first charter, 49
  trading posts, 31
Chicago, Duluth & Georgian Bay Co., 246
Chicago Shipbuilding Co., 196
China, direct route to, 4, 5, 15
China, 245
Chippewa, 53, 59
Chippewa Portage Co., 73
City of Superior, 94
Clairton Steel Co., 242
Clark, Dr. Edward B., 70
Clark, George Rogers, 49
  and his "Big Knives," 21 *et seq.*
  plea, 20 *et seq.*
Clark, John T., 88
Clark Dry Dock Co., 197
Clay, Henry, 78
Cleveland, 27, 54, 297
  one of the important iron centers of world, 111
Cleveland & Buffalo Transit Co., 246
Cleveland-Cliffs Iron Co., 206, 294, 295
Cleveland Iron Mining Co., 97, 99, 121, 157
Cleveland Ship Building Co., 197
Cleveland Transportation Co., 153
Clinton, De Witt, 28, 74
Coffin, Charles P., 196
Coffinberry, H. D., 197
Columbia, 107
Columbia River, 45
Columbia Steamship Co., 294
Columbus, Christopher, 2, 52
Commerce, effect of strike on, 214
  first between the United States and Canada, 26
  in Lake Superior iron ore, 112
  motive for discovery, 6
  of the Lakes, 127
  package freight business, 245
  pageant of inland, 288
  smoke signals of, 73
  through the Soo Canal, 150
Congress, indifference of, 183
Conners, W. J., 245
Connecticut Land Co., 121
Conti, Prince de, 8
Coolidge, Calvin, 232
Cooper Institute, 125
Copper, change due to, 83
  discovery of, 32 *et seq.*, 58
  mass from superior, 73
  rush, 61 *et seq.*
  stratum over iron, 180
Corning, Erastus, 83, 92
Corrigan, James, 276, 278
Corsica Iron Co., 207
Coulby, Harry, 156 *et seq.*, 278, 279
  fight against unions, 214 *et seq.*
  philosophy, 284
Courcelles, Governor, 5
Couzens, James, 182
Crèvecœur, Fort, 14
Croton Dam, 127
Crowell & Murray, 178
Culton, Willard E., 134 *et seq.*
Cunard Steamship Co., 261
Curtis, Gen. J. P., 101
Cuyahoga River, 27

Dalton, Henry G., 183 *et seq.*, 244
  views on merchant marine, 231 *et seq.*

Davidson, James, 129 *et seq.*, 150, 183, 193, 211
  story, 117 *et seq.*
  with Bradley, 118
Dearborn, Fort, 29, 49
Delaware, Lackawanna & Western Railroad, 246
Des Plaines River, 223
Detroit, 2, 12, 25, 27, 53, 297
  Indian attack on, 19 *et seq.*
  trading posts, 31, 47
Detroit & Cleveland Navigation Co., 246
Detroit Drydock Co., 128, 184, 197
Detroit Sheet Metal & Brass Works, 197
Detroit Ship Building Co., 197
Dewey, Francis A., 53
D. G. Kerr, 203
Dickens, L. M., 131
Diederich, George, 38
D. J. Morrell, 256
Dollier, Father, 6
Doner, Michael, 65
Donner Steel Co., 294
Doolittle, Sylvester, 57
Dry Dock Engine Works, 197
Duddleson, John, 257
Duluth, 36, 226
Duluth & Iron Range Railroad Co., 171
  extension, 145
  founder, 144
  grant, 139 *et seq.*
Duluth & Winnipeg Railroad Co., 139, 162
Duluth, Missabe & Northern Railway Co., 142, 162, 173
Dwight, H., Jr., 83
Dwyer, Thomas, 83

Eagle Harbor, 59
Eagle Harbor Coast Guards, 259
Eagle River, 59
E. B. Ward, Jr., 128
Eddy, Charles A., 278
Eddy, Thomas, 28
Edison, Samuel, 116
Edison, Thomas Alva, 116
E. G. Townsend, 256
E. K. Collins, 72
Eliot, Nancy, 116
Ella G. Stone, 144
Ellington, Conn., 115
Elphicke, C. W., 278
Ely, George H., 138
Ely, Heman B., 108
Ely, Samuel P., 108, 138
Empire, 57
England, commerce and tonnage in, 220
  struggle for possession of Lakes, vii
  suspension of commercial intercourse in 1794 with, 25
  turns to America for ships, 261
Enterprise, 53
Ericsson, Capt. John, 56 *et seq.*
Erie, Lake, 2, 10, 11, 27, 50, 223
  Battle of, 27
  (*see also* Great Lakes)
Erie & Western Railroad, 246
Erie & Western Transportation Co., 245
Erie Canal, built in sections, 75
  in operation, 77
  money for construction, 74
  opening, 52
  started in 1817, 75
Erin, 224
Evans, E. T., 245
Evans, J. C., 245
Eveleth, Minn., 170, 174 *et seq.*
Everett, P. M., 66 *et seq.*, 205
Exchange, 117

Farr, Merton E., 184, 261, 270
Fairbanks, Erastus, 84
Fairbanks, Joseph P., 83
Fairbanks & Co., E. & T., 79
Fay, George A., 145
Fayette Brown, 209
Fellows, John, 26
Ferries, service, 247
Field, Marshall, 197
Firth, Frank J., 278
Fish, O. J., 198
Fisher, Waterman A., 70, 100
Fitzgerald, William F., 197
Fitzgerald, W. M., 197
Fleet Corp., 265
Flynn, Capt. C. O., 144
Fogg & Co., J. S., 141
Forbes, John M., 84
Ford, Henry, 182, 274
Ford, James M., 154
Ford Motor Co., 182, 295
Forest City, 183
Forster, John Adam, 36
Forsythe, Robert, 196
Francé, hold on world commerce, 6
  struggle for possession of Lakes, vii
Franklin, Benjamin, 25
Freeman, 94
Freight, rates, 112

Freighter, approach of the 600-foot, 217, 240
necessity for bulk, 227
snub-nosed, 194
Frick, Henry Clay, 168, 187
Frontenac, Count, La Salle's partner, 6 *et seq.*
Frontenac, Fort, 4, 14
establishment of, 6 *et seq.*
fallen, 18
Frontenac, Lake (*see* Ontario)
Frontenac, 50
fate of, 8 *et seq.*, 55
Fullerton, Dr., 144
Furnaces, Claire, 154
Ella, 160
Fanny, 160
Mabel, 154
Furs, difficulty over importation, 39
wealth in, 37 *et seq.*
Fur trading, Astor's chains, 45
call of, 72 *et seq.*
competition, 27 *et seq.*
method, 47 *et seq.*
private, 47

Gardner, William A., 196
Garretson, General, 197
Gary, Elbert H., 282
Gary, Ind., 297
Gates, H. N., 95
Gay, Stephen R., 115
General Taylor, 94
General Transit Co., 294, 295
General Warren, 72
Geneva, 153
Genoa, 153
George III, King, 18
Gerhauser, W. H., 198
Gesick, Marji, 66, 205
Gilchrist Transportation Co., 198, 230
Gill, Valentine, 76
Girard, Stephen, 44
Gladwin, Major, 20
Glenn, Major, 86
Globe Iron Works Co., 183, 197, 198
Goff, G. B., 176
Gogebic Lake, 146
Gogebic Range, 182
Goliath, 73
Goodrich Transit Co., 246
Gordon, W. J., 106
Goulder, Harvey D., 217, 221, 277
Government, appropriations for harbor improvements, 52
Grain, maiden shipment, 49 *et seq.*
Grand River, 76
Granger, Eli, 27
Grant, Ulysses S., 114
Graveraet, Robert J., 70, 100
Great Britain, 54
Great Lakes, average rate on, 221
Carnegie won over to, 191
chain of trading posts, 45
changes on, 124 *et seq.*
commercial development, 31 *et seq.*, 217
date of discovery, 1
development of mills and furnaces, 229
effect of war on, 261 *et seq.*
Father Hennepin's description of, 10 *et seq.*
first composite ships, 209 *et seq.*
first ships in, 27
forts held by British, 25
improvements on, 222 *et seq.*
in hands of Iroquois, 18 *et seq.*
labor control of, 278 *et seq.*
lack of terminal facilities, 220
largest fleet on, 152
open shop conditions, 281
organization on, 276 *et seq.*
part in steel industry, 296 *et seq.*
part of Hanna Co. in development, 154 *et seq.*
possession established, 25
ready for deep-draught navigation, 216 *et seq.*
retreat for "wanted men," 280
Rockefeller fleet on, 181 *et seq.*
romance of lumber gone, 248
shipbuilding during World War, 265 *et seq.*
steam navigation on, 50, 54
successful combination on, 255
time-saving in traffic, 200
transportation costs on, 199, 296
water connections with, 218, 223
waterway of peace and commerce, 26
whalebacks on, 229 *et seq.*
Great Lakes Shipbuilding Co., 244
Great Lakes Steamship Co., 294
Great Lakes Steel Corp., 155
Great Lakes Towing Co., 260
Great Lakes Transit Corp., 245, 246, 295
Great Northern Railroad, 198, 217, 220
Great Western, 118
Green Bay, excursion to, 55

Green Bay & Superior Railroad Co., 99
Griffin, vii, 1 *et seq.*, 15 *et seq.*
Gruber, J. H., 140

Hamilton, Lt.-Gov. Henry, 21 *et seq.*
Hamilton College, 136
Hanna, H. M., 153, 196
Hanna, Leonard C., 154, 196
Hanna, Leonard P., 255
Hanna, Marcus A., 153 *et seq.*, 196
Hanna & Co., M. A., 155, 255
Harlow, A. R., 70
Harrison, explorer, 49
Harry Coulby, description of, 289 *et seq.*
Hart, Henry, 104
Harvey, Charles T., 84, 182
  building of Soo Canal, 79 *et seq.*, 85
  trouble with Canfield, 85
Hawgood, H. A., 278
Hawkins, Capt. Rufus, 57
H. T. Alverson, 225
Hearding, John H., 173
Hebard, 259
Helm, Capt. Leonard, 22
Hennepin, Father Louis, 2, 10 *et seq.*, 49
Henry, Alexander, 36
Henry, Patrick, 20
Henry Clay, 53
Hercules, 57
Hibbing, Minn., 162, 170
  lands around, 134 *et seq.*
Higgins, O. T., 178
Hill, James J., 198, 217, 220
Hill White Transit Co., 246
Hobart Iron Co., 207
Hocquart, letter from, 33
Houghton, Douglas, 36, 61 *et seq.*
Houghton, Jacob, 65
Hoyt, Colgate, 196
Hoyt, James Humphrey, 196 *et seq.*
Hoyt, Jesse, 125
Hoyt, Dustin & Kelley, 196
Hudson River, 223
Hudson's Bay Co., introduction of bateaux, 37, 42, 58
Hugy & Delemater, 56
Hulett, Frank E., 203
Hulett, George, 203, 228
Hull, Gen. William, 28, 46, 49
Humphrey, Representative, 213
Hurley, Edward, 264
Huron, Lake, 2, 11, 12, 260
  (*see also* Great Lakes)
Huron Barge Co., 230
Huron Transportation Co., 295
Hutchinson & Co., 294

Illinois, 31, 72, 78
Illinois, 94
Illinois, Lake (*see* Michigan)
Illinois River, 223
Illinois Steel Co., 229
Independence, 59, 60
India, 245
Indiana, 31
Inland Waterways Division, 274
Interlake Co., 230
Interlake Steamship Co., 230, 240, 289, 294
International Exposition in Paris, 123
International Harvester Co., 294
Interstate Commerce Commission, 296
Interstate Steamship Co., 294
Iron, brands of charcoal, 154
  cargoes of, 130
  change due to, 83
  dependence on Superior mines, 151
  development of mines, 122
  discovery of, 65, 68, 205
  docks for loading, 201 *et seq.*
  first quantity shipment, 100
  hematite specimens, 123
  highest price paid in United States, 115
  importance, 122
  in Minnesota, 123 *et seq.*, 131 *et seq.*
  location in Superior region, 178 *et seq.*
  low price of Superior ore, 112
  on the Mesabi, 172
  pig, 114, 154
  problem of shipping, 107
  search for, 66
  story of, 98 *et seq.*
  stratifications, 179 *et seq.*
  use of 100% Mesabi ore, 242
Iron Cliffs, 225
Iron Duke, 225
Iron Ores of Lake Superior, The, 178
Iron Range Railroad, 178
Iroquois Indians, pro-British, 7, 17 *et seq.*
Isaac, Sir, 28
Ishpeming, Mich., 111, 145
Ives, William, 65

Jackson, Andrew, 175
Jackson, Tower, 99
Jackson Iron Co., 205

Jackson Iron Mining Co., 111
Jackson Mining Co., 205
  founding of, 67
James A. Farrell, 203
James H. Hoyt, 227
Jane, 76
Japan, 245
Jay, John, 26, 30
Jefferson, Thomas, 20, 45
Jemina, 27
Jenkins Steamship Co., 294
Jesuits, 35
J. F. Warner, 297
John Jacob Astor, 58
Johnson, Capt. G. D., 66
Johnson, Sir William, 19
Joliet, Louis, 5
Joliet Steel & Iron Co., 147
Jones, Capt. George Washington, 57
Jones & Laughlin, 243
Jones Transportation Co., 295
Joy, James F., 80
Joys, A. M., 197
Julia Palmer, 60

Kalkasha, Mich., 21
Kate Winslow, 129, 150
Kenyon College, 238
Kerr, D. G., 278
King, James, 65
Kingston, Ontario, terminal, 6, 51
Kinney Steamship Co., 294
Kinsman Transit Co., 294
Kirby, Frank E., 125, 184, 197
  engine designs, 127 *et seq.*
Kirtland, F. W., 67
Knight, Sheldon, 73

Lackawanna Steamship Co., 230
Lac La Belle, 94
Lady Elgin, 94
Lake Carriers' Association, 213, 217, 276, 281, 285, 294
Lakeland, 259
Lake Ports Shipping & Navigation Co., 295
Lake Seamen's Union, 213
Lake Shore & Michigan Southern Railway, 157
Lake Superior & Ishpeming Railway, 206
Lake Tankers Corp., 295
La Salle, Cavelier de, explorations, vii, 1 *et seq.*, 49
Laws, agricultural, 135
  homestead, 135
  land, 134
Laws—(*Continued*)
  mineral, 134
  of the ship, 281
  timber land, 135
L. C. Waldo, 257
Lee, Richard Henry, 143
Lehigh Valley Railroad, 246
Lehigh Valley Transportation Co., 198
Leishman, John, 240
Leishman & Snyder, 241
Lemoyne, 226
Lewiston, N. Y., 25, 51
Lighthouses, building of, 251
Limestone, uses, 251
Lincoln, Abraham, 175
Livermore, Dr., 97
Livingstone, William, 182 *et seq.*, 217, 277, 285
Loading, improvements in methods, 228
  records, 203 *et seq.*
London, commerce and tonnage in, 220
  fur exports to, 44
London, 72, 116
Longpre, L. J., 131
Louis XIV, King, 7
Louis XV, King, 18
Louisiana Purchase, 48
Luedke, H. A., 197

McAlpine, W. J., 88
McCaskill, John, 166
McCormick, Thomas H., 259
McDougall, Alexander, 196, 229
McFadon, Robert D., 196
McGonagle, William A., 142
Machinery, for unloading, 119 *et seq.*
  Hoover & Mason, 228
  Hulett grab bucket, 194
  Hulett unloader, 194
  inventions, 203
  replaces horses, 119 *et seq.*
McKay, Capt. George P., 277
Mackinac, 27, 29, 46
  American Fur Co.'s principal trading posts, 47
  Straits of, 2
McKinley, John, 167
MacKnight (warehouse owner), 73
McMillan, Gilbert N., 197
McMillan, Hugh, 197
McMillan, James H., 197
McMillan, William C., 197, 277
McVittie, Alexander, 184, 197
Madison, James, 30

Malden, Fort, 46
Manhattan, 97
Manning, Albert R., 297
Marine Cooks' & Stewards' Union, 213
Marine Engineers' Beneficial Association, 213
Marine Firemen, Oilers' & Watertenders' Union, 213
Marine Review, 49, 289
Markham, George C., 197
Marquette, Father, 123
Marquette, Mich., 49, 145
  celebration at, 97 *et seq.*
  mail reaches, 103
Marquette Iron Co., formed, 70
Marshall, Josiah T., 56
Martha Ogden, 54
Marvill, Lewis, 58
Mary, 27
Masaba Steamship Co., 295
Mason, Governor, 61, 77, 203
Massillon, 119
Masters' & Pilots' Association, 213
Mather, Richard, 122 *et seq.*
Mather, Samuel, 142, 157, 158, 196, 231
Mather, Samuel Livingston, contribution to the history of the Lakes, 121 *et seq.*, 158, 206
Mather, William G., 206
Maumee River, 20
Mellen, H., 65
Mellen, R. S., 65
Membre, Father, 10
Mercer, James, 131
Merchant, 59, 60, 245
Merchant marine, Dalton's views on, 232 *et seq.*
Merchant Marine Commission, inquiry, 211 *et seq.*
Mercury, 245
Merritt, Alfred, 161 *et seq.*
Merritt, Alva, 161 *et seq.*
Merritt, Cassius C., 161 *et seq.*
Merritt, J. E., 161 *et seq.*
Merritt, John J., 161 *et seq.*
Merritt, Leonidas, Jr., 161 *et seq.*
Merritt, T. B., 161 *et seq.*
Merritt, Wilbur J., 161 *et seq.*
Mesaba Steamship Co., 230
Mesabi Iron Co., 133
Mesabi Range, 131
  effect of opening, 182
  iron on the, 161 *et seq.*
Miami, Fort, 25
Michigan, 31, 178
  admittance to union, 50
  efforts to build canal, 77 *et seq.*
Michigan, Lake, 2, 13, 223
  (*see also* Great Lakes)
Michigan Central Railroad, 80
Michigan Limestone & Chemical Co., 250
Michigan Pioneer Collections, 58
Milwaukee, 226
Milwaukee Dry Dock Co., 197
Milwaukee, Lake Shore & Western Railroad, 147
Milwaukee Shipyard Co., 197
Mineral Rock, 94
Mines, Biwabik, 168
  Calumet & Hecla copper, 83
  Chandler, 145
  change in methods, 175 *et seq.*
  Colby, 147
  Essen, 160
  Mahoning, 177
  Mountain Iron, 161
  Norrie, 19
  number on the ranges, 175
  of Ishpeming, 124
  of Marquette, 124
  of Negaunee, 124
  Paulson, 123
  Pioneer, 145
  Sibley, 145
  Soudan, 135, 145, 171
  Zenith, 145
Mink, 27
Minnesota, 31, 178
  land grants, 139
Minnesota, 297
Minnesota-Atlantic Co., 246
Minnesota Exploration Co., 160
Minnesota Iron Co., 132, 160, 207
  building up of, 135 *et seq.*
  founder, 144
Minnesota Steamship Co., 184, 196, 207
Minor, Representative, 212
Mississippi River, 223
  navigable, 14
Missouri River, 45
Mitchell, John, 278
Mitchell, Peter, contribution to history of Lakes, 130 *et seq.*
  prospecting, 149
Monroe, James, 29, 49
Montreal, 32
Moore, Capt. Smith, 119
Morcom, Elisha J., 171
Morford, T. T., 278

Morse, Jay C., 142, 157, 196, 229
Mott, Angelique, 63 *et seq.*
Mott, Charley, story, 63 *et seq.*
Mountain Iron Co., 168
Munising Railroad, 207
Munro, James W., 132
Mutual Transit Co., 246
Mygatt, George, 110

Nancy, 27
Napoleon, 60
National Steel Corp., 155
Newaygo Tug Co., 295
Newman, T. F., 278
Newton, Byron R., 259
New York City, 31, 78
  British forces, 7
  in 1784, 38
New York Central Railroad, 246
Niagara, 53
Niagara Falls, 4, 10 *et seq.*, 27, 51
Niagara, Fort, 18
Niagara River, 10
Nibourde, Father, 10
Nichols, L. L., 80
Nolan, Louis, 66
Northerner, 72, 94
Northern Light, 94
Northern Pacific Railroad, 161
Northern Steamship Co., 198
North Star, 72, 94, 163
Northwest Co., 47
Northwestern Fuel Co., 254
Northwestern Transportation Co., 209
Northwest Fur Co., 45
Norwood, J. G., 123

Ocean, 59, 69
Odanah Iron Co., 207
Ogden, William B., 206
Ogdensburg, terminals, 51
Oglebay, Norton & Co., 288
Ohio, 31, 78
  in Union, 50
Ohio Iron & Steel Co., 160
Ohio River, 223
  falls of, 21
Oliver, Henry W., 187, 241
Oliver Iron Mining Co., 187
Onoko, 183, 197
Ontario, Lake, 5, 10, 11, 29, 178
  (*see also* Great Lakes)
Ontario, gate of, 55
  first steamship on Lakes, 50 *et seq.*
Ontonagon pool, 133
Ontonagon River, 35, 58
Ore & Coal Exchange, 287
Osceola, 49
Oswego, N. Y., 25, 28
Oswego River, 26
Otis Foundry Co., 114
Ottawa River, 33
Otter, 27
Owen, David Dale, 123
Owens, Thomas, 144, 171

Pacific Fur Co., 45
Packet, New York, 40
Paisley, R. J., 294, 295
Pamlico, 297
Panama Canal, 255
Pankhurst, J. F., 196
Panther, 118
Peace, of 1783, 37
Peck, E. M., 209
Peck & Masters, 183
Peninsular, 73
Pennsylvania, 31, 78
Pennsylvania Railroad, 154, 245
Penokee & Gogebic Development Co., 160
Penton, Henry, 267
Perry, Oliver H., 27, 49
  victory, 29
Perseverance, 27
Philadelphia, 245
Philena Mills, 119
Pickands, Henry S., 229
Pickands, James, 142, 157, 196
Pickands, Mather & Co., 147, 157, 184, 196, 206, 214, 229, 231, 254, 279
Pigeon River, 50
Pioneer, 53
Pittsburg & Conneaut Dock Co., 204
Pittsburg & Lake Angeline Iron Co., 206
Pittsburgh, Shenango & Lake Erie Railroad, 191
Pittsburg Steamship Co., 192, 195, 214, 294
Poe, Gen. Orlando M., 93, 181
Poe lock, 183, 222
Pompadour, Madame, 18
Pontiac, Chief, 19, 49
Portage, facilities, 73
Porter, Augustus, 27
Porter, Peter B., 27, 28
Porter, Barton & Co., 27, 28
Potter, C. W., 196
Prescott, terminal, 51
Prindwille, John, 297
Proctor, Colonel, 28
Providence Steamship Co., 230

Provincial Parliament of Upper Canada, enactment for canal, 75
Puget Sound, 218

Queen City, 288
Quinte, Bay of, 8

Railroads, from Marquette to the mines, 109
owners of water terminals, 246
stages of experimentation, 52
Ramsey Crooks, 72
Ramsey, engineer, 55
Ramsey, Senator, 133
Randolph, John, 25
Rates, reduction, 246 *et seq.*
Recovery, 27
Red Star Navigation Co., 246
Regina, 260
Reiss Steamship Co., 295
R. H. Boughton, 77
Rhodes, Daniel P., 154
Rhodes, James Ford, 154
Rhodes, Robert R., 154
Rhodes & Co., 154 *et seq.*
Rhodes, Card & Co., 154
Rideau Canal, 56
Ritchie, Dr., 144
Rivers and Harbors, Committee on, 217
R. J. Hackett, 183, 227
Rochester, N. Y., 27
Rockefeller, John D., 168, 185, 229
fleet of ore boats, 181 *et seq.*
rivalry with Carnegie, 193 *et seq.*
Rockport Steamship Co., 295
Rockwell, E. S., 66
Rogers Brown Iron Co., 155
Ronde, Sieur de la, 33, 36
Rossell, Frank R., on steamship building, 54
Rust & Burrows, 176 *et seq.*

Sacketts Harbor, shipbuilding at, 50 *et seq.*
Saguenay, 33
Saginaw, Mich., 31
Samson, 57
Samuel Mather Science Hall, 239
Sanderson, 56
Sault Ste Marie, 32
(*see also* Soo Canal)
Saunders, A. C., 196
Saxton, Thomas, 143
Sayre, Capt. C. E., 49
Ste Claire, Lake, 11
St. Lawrence River, 5, 11, 223, 297
St. Louis, 45
St. Louis County Historical Society, archives of, 132 *et seq.*
St. Mary's, Ohio, 31
St. Mary's Falls, 12
St. Mary's River, 181
St. Mary's Ship Canal Co., charter, 83
St. Paul & Duluth Railroad, 161
Schenectady, N. Y., 26
Schoonmaker, 243
Scoopers' Union, 213
Script right, 134 *et seq.*
Sea Gull, 118
Seaman's Union, 278
Seeman, 95
Seneca Chief, 75
Seneca River, 26
Seneca Indians, 8
Seymour, John F., 84
Sharon Iron Works, 101
Shea, John, 144
Sheadle, J. H., 277
Shenango, 240, 243
Shenango Furnace Co., 242, 294
Shipbuilding, 50 *et seq.*
after 1871, 150
amalgamation, 197
amortization after War, 271 *et seq.*
as a business, 129, 183
by Kirby, 127 *et seq.*
during the World War, 261 *et seq.*, 269 *et seq.*
early, 256
for England, 261 *et seq.*
on the Lakes, 127 *et seq.*, 193 *et seq.*
Ship Owners' Dry Dock Co., 197
Shipping, cost sheets on, 56
financial possibilities in, 211
in 1896, 181
lake contrasted with ocean, 195
strike, 213 *et seq.*
Shipping Board, 267
Ships, appraisal of, 124 *et seq.*
change from sailing, 124 *et seq.*, 216 *et seq.*
composite, 209 *et seq.*
days of sailing over, 194
first in mining community, 97
first iron for ore trade, 183
first on Erie, 54
first propellor, 56 *et seq.*
first screw wheel, 57
first steel, 227
first with engines aft, 227
foreign, 212
freighters (*see* separate item)

Ships—(*Continued*)
growing interest in iron, 127 *et seq.*
increase of steel, 221 *et seq.*
in New York Harbor, 125 *et seq.*
largest fleet of cargo carriers, 152
number in 1833, 56
of steam propulsion on Lakes, 50 *et seq.*
self-unloading, 251
size a factor, 194
tramp, 212
"Whaleback," 229 *et seq.*
Shoenberger & Co., 240
Silverman, Lazarus, 141
S. J. Tilden, 151
"Sketch of the Marine of Lake Erie Previous to 1829, A," 53
Smart, W. G., 132
Smith, Edward, 278
Smith, W. W., 278
Snelling, Colonel, 47
Snyder, William Penn, 240, 244, 255
Snyder & Co., W. P., 241
Society of Naval Architects and Marine Engineers, 271
Sodus Bay, 26
Soo Canal, building, 79
coal through, 253
control of, 93
cost, 94
difficulties, 86 *et seq.*
factor in westward growth, 93
general merchandise through, 245
increased number, 285
loss of revenue impending, 113
making of "steam punch," 88 *et seq.*
movement of grain through, 227
records of 1855 and 1929, 287
records of 1917, 274
tonnage records, 94 *et seq.*, 208, 219
wheat through, 149
work on, 85 *et seq.*
Sophia, 54
Spain, struggle for possession of Lakes, vii
Sparks, T. Ashley, 263
Spence, Robert, 196
Stanard, Capt. Charles C., 58
Standard Oil Co. of Indiana, 295
Standard Steamship Co., 230
Stannard, L., 131
Starke, Fred C., 197
Steamships (*see* Ships)
Stone, George C., 135, 144
Stone, James, 288
Storm, of 1869, 124 *et seq.*
of 1913, 256 *et seq.*
Stout, Capt. Jacob, 37
Stratina, manufacture of, 135
Stuntz, George R., 136
Suez Canal, vii
Sullivan, Dennis, 278
Sullivan & Co., D., 294, 295
Sun, 245
Sun, New York, 210
Superior, 53
Superior, Lake, 3, 33, 42, 94
first accurate chart, 58
first steamer on, 59 *et seq.*
(*see also* Great Lakes)
Surprise, 27
Swallow, 60
Sweet, Capt. Ben, 163

Taylor, John, 65
Teal River, 66
Technical schools, for sailors, 282
Tecumseh, Chief, 28 *et seq.*, 46, 49, 72
Thomas Quayle, 151
Thompson, Sheldon, 28
Thousand Islands, 51
Tibbits, Benjamin, 84
Ticonderoga, Lake, 17
Tilden, Samuel L., 206
Tinker, L. W., 73
Tinker & Co., L. W., 73
Todd, David, 154
Todd, Sarah, 38
Tomlinson, George Ashley, 210, 219, 244, 274, 294, 295
Tompkins, Daniel D., 74
Tonty, Henry de, La Salle's companion, 4 *et seq.*, 49
Toronto, terminal, 51
Tower, Charlemagne, 132 *et seq.*
Tower, Charlemagne, Jr., 143
Tower, Minn., 170
Townsend, Jacob, 28
Traffic, on the Lakes, 57
Transfer, rail and vessel, 253 *et seq.*
Transportation, cheapest business, 222
from Lakes to tidewater, 218 *et seq.*
low cost, 294
of stone, 250 *et seq.*
prices for ore, 219 *et seq.*
problem of civilization, 216
railway in, 218
Treaty, between Cass and the Chippewas, 36

Treaty—(*Continued*)
between the Miami and Illinois tribes, 14
Jay's, 26, 41
of 1763, 18
of 1783, 25
of 1817, 29
of Washington with Indians in 1855, 134
on shipping on Great Lakes, 29
Tucker, Charles A., 259
Tuscarawas Iron Co., 155

United States, declaration of war of 1812, 28
frontier in 1818, 49
grain territory, 224
Lakes territory joined with, 32
largest contract for ships, 265
mineral laws, 134
reasons for growth, 216, 295
struggle for possession of Lakes, vii
United States, 54
United States Coast Guard Service, 259
United States Commissioner of Lands, 83
United States Corps of Topographical Engineers, 85
United States Senate, 255
United States Steamboat Service, 282
United States Steel Corp., 131, 191, 207, 243, 282, 297
United States Steel Products Co., 294
United States Weather Bureau, 256
Upper Illinois River, 223
Upson, J. E., 278

Vance, David, 278
Van Cleve, Captain, 54
Vandalia, first propellor on, 56 *et seq.*
Vaudreuil, Marquis de, 18
Vermilion, Ohio, 115
Vermillion Range, 135
effect of opening, 182
Verona, 153
V. H. Ketchum, 160
Victory, 194
Vienna, 153
Vincennes, Ind., 21

Wade, J. H., 197
Wagstaff, 117
Walk-in-the-Water, 53
Wallace, Robert, 119, 197
Ward, Capt. E. B., 69, 72, 80 *et seq.*
Warmington, George H., 154
War of Independence, end of, 25
Washington, George, 30, 175
Washington, D. C., 133
Watchful, 118
Watteau, Father, 10
Wealth, potential in new world, 7
Webb, B. L., 100
Weirton Steel Co., 155
Weitzel lock, 150, 222
Welland Canal, 285
in operation, 77
opening, 52
work begun in 1822, 76
Wells, Capt. Judson, 107
Western Transit Co., 246
West Points Steamship Co., 246
Wheat, dependence on Northwestern, 151
elevators, 225
markets, 212
shipments, 149 *et seq.*
Wheeler, E. S., 181
White, Peter, 71, 98, 157, 288
action on mail problem, 102 *et seq.*
during Civil War, 113 *et seq.*
in real estate, 106
profits on pig iron, 114 *et seq.*
Whiting, J. T., 73
Whitney, Daniel M., "Mail train" of, 102
Wieland family, 129
Wilkins, Fort, 59
Wilkinson, 27
Willard, L., 130 *et seq.*
William A. McGonagle, 203
William Livingstone, 285
William Peacock, 53
William Penn, 53
William P. Snyder, 243
William III, King, 10
Wilpen, 243
Wilson, Thomas, 27
Wilson Transit Co., 294
Wisconsin, 31, 78, 178
Wisconsin & Michigan Transit Co., 246
Wolf & Davidson Drydock Co., 197
Wolvin, A. B., 277
World War, 216
W. P. Snyder, Jr., 244
Wyandotte Transportation Co., 295

Zephyr, 27

Date Due

APR 2 1 1991			
NOV 1 9 1993			
MAY 1 4 [illegible]			
APR 1 5 2000			
APR 1 1 2000			

CAT. NO. 23 233 PRINTED IN U.S.A.

HF 3157 .B4 1930
Beasley, Norman.
Freighters of fortune; the sto
010101 000
0 1163 0229291 1
TRENT UNIVERSITY

HF3157 .B4 1930
Beasley, Norman
Freighters of fortune: the
story of the Great lakes

DATE
198112
ISSUED TO

198112